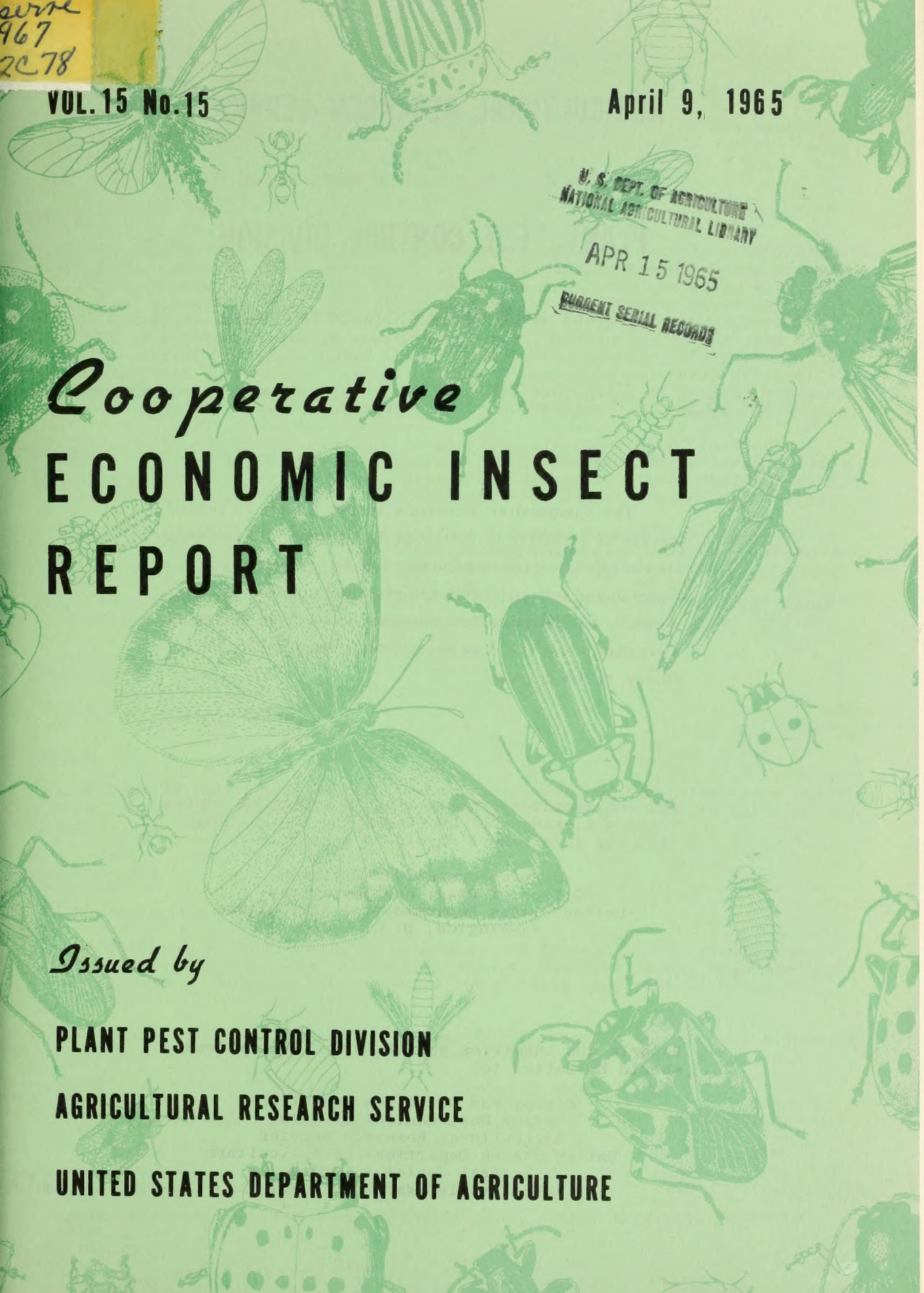


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Cooperative **ECONOMIC INSECT REPORT**

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS:

BROWN WHEAT MITE becoming damaging in southwestern Oklahoma, and live SOUTHWESTERN CORN BORER larvae found in 80 percent of dry cornstalks in Harmon County of same area. Light numbers of full-grown ARMYWORM larvae found on rye cover crop in Maryland, and three adults of FALL ARMYWORM taken at Charleston, South Carolina, unusually early for area. (p. 299). ALFALFA WEEVIL feeding damage apparent on 100 percent of alfalfa plants in northeast Georgia, and adults very active in western and central Nevada. CLOVER LEAF WEEVIL larvae damaging alfalfa and clover in Maryland. Larvae of a WEEVIL (*Hypera brunneipennis*) heavy on alfalfa in San Luis Obispo County, California. PEA APHID increasing in several areas of Oklahoma and required controls on this crop in New Mexico. (p. 300).

GREEN PEACH APHID population expected to be high in fruit area of Colorado. APPLE APHID noted on apple buds in Delaware. PLUM CURCULIO adults jarred from peach trees in Fort Valley, Georgia. Heavy leaf damage by EYE-SPOTTED BUD MOTH larvae appearing on unsprayed fruit in Willamette Valley of Oregon. (p. 301)..

Increasing POTATO PSYLLID nymphal populations becoming hazard to potatoes in Arizona. (p. 302). RASPBERRY CROWN BORER caused extensive damage to untreated blackberry plantings in Oregon. (p. 303).

PINK BOLLWORM larvae and pupae taken on farm in Maricopa County, Arizona; three moths emerged from bolls 4 inches deep on Cotton Research Center. (p. 304).

CORRECTIONS

See pages 309, 310.

DETECTION

AN ERIOPHYID MITE (*Eriophyes emarginatae*) reported for the first time from Ohio. (p. 301). AN ANT (*Paratechna melanderi*) reported for first time in Butte County, California. (p. 309).

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 307).

Report of Survival of Boll Weevil as Determined by Surface Trash Examinations During the Spring - 1965. (pp. 312-314). Reports indicate rather high counts in areas surveyed. Survival rate averages 100 percent in 4 central counties in Texas.

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods Attacking Corn (grain and silage) in Arizona in 1964. (p. 315).

Summary of Insect Conditions in the United States - 1964

Insects Affecting Man and Animals. (p. 316).

Household and Structural Insects. (p. 326).

Reports in this issue are for week ending April 2, unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

APRIL 1965

The Weather Bureau's 30-day outlook for April calls for temperatures to average above seasonal normals east of the Continental Divide except for near to below normal in the Northern and Central Plains and the Upper Mississippi Valley. West of the Divide below normal averages are anticipated. Precipitation is expected to exceed normal west of the Divide except for near normal amounts in the Southern Plateau Region. East of the Divide above normal amounts are called for from the Northern Plains eastward over the Upper and Middle Mississippi Valley to the Great Lakes Region and the Ohio Valley. Subnormal amounts are anticipated over the Middle and North Atlantic Coastal Region as well as over the Southern Plains. Near normal amounts are expected in unspecified areas.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 5

Following several weeks of abnormal cold, a major warming trend occurred from the Pacific Ocean to the Appalachians. Heavy thundershowers occurred in the lower Mississippi River Valley and some heavy rains in southern California.

TEMPERATURE: Temperatures over the Rocky Mountains and the northern and central Great Plains averaged from 20° to 30° warmer than the previous week. A few stations in Montana, Wyoming, and South Dakota averaged more than 30° warmer. Increases in average temperature in Texas ranged from 7° at Galveston to 19° at Wichita Falls. Slight increases occurred along the Ohio River. Minnesota averaged about 20° warmer. Temperatures south and west of a line from northern Montana to Jacksonville, Florida, averaged above normal; below normal temperatures prevailed elsewhere.

PRECIPITATION: A wide area from Montana and North Dakota to the middle Rio Grande Valley received no precipitation beyond light sprinkles or snow flurries. Scattered areas in the South and Southeast received substantial rains from thundershowers. One such area extended from Springfield, Missouri, to Nashville, Tennessee, and another from Shreveport, Louisiana, to Jackson, Mississippi. Some parts of Texas, such as at San Antonio and Waco, received more than 2 inches of rain. The eastern half of the Nation received precipitation early in the week while the northern and central Plains and the Southwest and Southeast received precipitation later on. Rains occurred over most of California on Wednesday, Thursday, and Friday, and continued in the south portions Saturday and Sunday. Parts of southern California received more than 2 inches and a few desert locations in one week received the equivalent normal amounts for a 7-month period. Heavy snow fell in some western mountains near the end of the week, and Flagstaff, Arizona, accumulated snow to 13 inches. (Weather supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

BROWN WHEAT MITE (*Petrobia latens*) - OKLAHOMA - Infestations moderate to heavy in many areas in southwest section. Brown spots appearing in some fields in Jackson and Tillman Counties; limited spraying underway in several areas. Infestations also present in Beckham and Jefferson Counties, but number still light to moderate. (Okla. Coop. Sur.). NEW MEXICO - Scattered, light to heavy infestations noted in alfalfa in Dona Ana and Lea Counties. Also a problem in small grain fields near Lovington, Lea County. (N.M. Coop. Rpt.).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - Present on wheat in many areas but numbers light. (Okla. Coop. Sur.).

GREENBUG (*Schizaphis graminum*) - OKLAHOMA - Present but spotty in southwest; most counts ranged 5-35 per linear foot. Heaviest count was 300 per linear foot in southeastern corner of Cotton County (southwest). Present in most fields checked in Tulsa, Mayes, Rogers, Craig and Nowata Counties (northeast), but counts did not exceed 30 per linear foot. Ranged 6-32 per linear foot in Wagoner and Muskogee Counties (east central). Other counts per linear foot by county, were: Kingfisher 1-3; Beckham and Custer 0; Alfalfa 0; Grant 0; Pawnee 0.5; Jefferson and Bryan 5. (Okla. Coop. Sur.). ARKANSAS - Surveys negative in south, east and northeast areas. (Ark. Ins. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Increasing on small grains in Yuma, Maricopa and Pinal Counties, but still light to moderate. (Ariz. Coop. Sur.). OKLAHOMA - Numbers light in wheat in scattered areas of central, south central and west central sections. Damaging barley in local areas of Cotton County (southwest). (Okla. Coop. Sur.).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - Present on small grains in most areas checked in southwest, central, east central and northeast; some counts in southwest area as high as 250 per linear foot. Counts in other areas vary 0-80 per linear foot. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - CALIFORNIA - Medium on barley locally in Norco, Riverside County. (Cal. Coop. Rpt.). OKLAHOMA - Light (up to 30 per linear foot) in wheat checked in Jackson, Cotton, Kingfisher, Beckham and Jefferson Counties. Widespread, but light, in wheat in northeast and east central areas. (Okla. Coop. Sur.).

SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) - OKLAHOMA - Dry cornstalks checked in Harmon County (southwest) 80 percent infested with live larvae. Field in Tulsa County (northeast) 20 percent infested. (Okla. Coop. Sur.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - OKLAHOMA - Light numbers noted in wheat in Kingfisher and Mayes Counties. Also noted on alfalfa in Wagoner County. (Okla. Coop. Sur.).

ARMYWORM (*Pseudaletia unipuncta*) - MARYLAND - Light numbers of full-grown larvae found on rye cover crop near Snow Hill, Worcester County. (U. Md., Ent. Dept.).

FALL ARMYWORM (*Spodoptera frugiperda*) - SOUTH CAROLINA - Collection of 3 adults in light trap at Charleston, Charleston County, week ending March 28, unusually early for this area. (Nettles et al.).

DARKLING BEETLES (*Blapstinus* spp.) - ARIZONA - Building up rapidly in lawns throughout Maricopa County. Migration into homes underway, causing problems in many homeowners. (Ariz. Coop. Sur.).

CARROT BEETLE (*Bothynus gibbosus*) - IDAHO - Infestation spotted in lawn at Middleton, Canyon County, March 11. (Hall).

ALFALFA WEEVIL (Hypera postica) - GEORGIA - Feeding damage apparent on 100 percent of alfalfa plants in northeast; as many as 6 larvae per terminal noted. Fields show characteristic frosted appearance. (Johnson). Larvae numerous on alfalfa in Spalding County. (Tippins). MARYLAND - Small larvae continue active on alfalfa in Snow Hill area of Worcester County. (U. Md., Ent. Dept.). OHIO - Eggs found in 25-34 percent of samples of old stems of alfalfa collected March 17 in Lawrence County. Young larvae present in small numbers. (Niemczyk). ILLINOIS - No adults or larvae found in survey of alfalfa in southeast and southwest districts. (Ill. Ins. Sur.). MISSOURI - Larvae ranged 0-30 per 10 sweeps in alfalfa in Pemiscot County, southeast. (Jones). WYOMING - No adult activity noted in alfalfa in Platte, Goshen and Laramie Counties as of March 30. Alfalfa plant crowns just budding in these areas. (Marks). COLORADO - Adults extremely difficult to find in alfalfa in Arkansas Valley. None taken to April 1 in fields with high populations in past seasons. (Schweissing). NEVADA - Adults very active and mating in most western and central counties on warmer days. (Coop. Rpt.).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Larvae present in all alfalfa checked in Tulsa, Wagoner and Payne Counties; ranged 1-18 per square foot. Averaged 2 per square foot in Beckham County. (Okla. Coop. Sur.). MISSOURI - Light larval feeding damage on alfalfa observed in Boone County, central. (Houser). ILLINOIS - Larvae noted in clover and alfalfa. Counts per square foot, by districts, as follows: Central 7-18 (average 12.5); west-southwest 0-22 (average 8.7); southwest 0-11 (average 5.4); southeast 0-18 (average 7.0). Larvae averaged 16.3 per 100 sweeps in alfalfa in southeast; first to third instars present. Some diseased specimens noted. These counts would not indicate any serious damage from this pest in 1965. (Ill. Ins. Rpt.). MARYLAND - Larvae caused light to moderate foliage injury to alfalfa and clover in all sections. (U. Md., Ent. Dept.).

A WEEVIL (Hypera brunneipennis) - CALIFORNIA - Larvae heavy on alfalfa plantings in San Luis Obispo, San Luis Obispo County. (Cal. Coop. Rpt.). ARIZONA - Larval counts decreased slightly in alfalfa in Yuma, Maricopa and Pinal Counties. New adult generation appearing in most areas. (Ariz. Coop. Sur.).

PEA APHID (Acyrtosiphon pisum) - ARIZONA - Populations decreasing in alfalfa in Yuma, Pinal and Maricopa Counties. (Ariz. Coop. Sur.). NEW MEXICO - Light to moderate in majority of alfalfa checked in vicinity of Dexter, Hagerman and Roswell, Chaves County. Heavier infestations in this same area are requiring controls. Populations of A. pisum and Therioaphis maculata (spotted alfalfa aphid) so heavy that stand of alfalfa is being destroyed. Populations continue unusually light in Dona Ana County alfalfa. (N.M. Coop. Rpt.). OKLAHOMA - Counts increasing in southeast, east central, north central and northeast areas as alfalfa begins to grow. Numbers ranged from 8 to as high as 160 per square foot in most fields checked. Counts further west very low to absent. (Okla. Coop. Sur.). ARKANSAS - Surveys indicate no marked buildup in southwest and central areas to April 3. (Ark. Ins. Sur.). ILLINOIS - Ranged 20-430 (average 152) per 100 sweeps in alfalfa in southeast and 20-140 (average 0.6) in southwest. (Ill. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Ranged 3-5 per 10 sweeps in Choctaw County (southeast). (Okla. Coop. Sur.). ARKANSAS - Surveys negative in southwest and central areas. (Ark. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs appearing in alfalfa in Maricopa and Pinal Counties. Light adult numbers present in Yuma County. (Ariz. Coop. Sur.). UTAH - Common in fields in North Logan, Cache County; mostly L. elisus. (Knowlton).

TARNISHED PLANT BUG (Lygus lineolaris) - ILLINOIS - Averaged less than one adult per 100 sweeps in alfalfa in southeast and southwest. (Ill. Ins. Rpt.).

THRIPS - NEW MEXICO - Mostly light in alfalfa checked in Dona Ana, Chaves, Eddy and Lea Counties. (N.M. Coop. Rpt.).

SPIDER MITES - ARIZONA - Spotted infestations of Tetranychus spp. occurring in alfalfa in Chandler-Gilbert area of Maricopa County. (Ariz. Coop. Sur.). NEVADA - Moderate to heavy numbers of Bryobia sp. or Petrobia sp. observed on alfalfa in Fallon, Churchill County. (York).

FRUIT INSECTS

GREEN PEACH APHID (Myzus persicae) - COLORADO - Approximately 40-45 percent of eggs nonviable; 30-35 percent hatched. Hatching delayed by cold weather during past 2 weeks with high mortality of nymphs. Outlook for high aphid population owing to large number of unhatched eggs. (Bulla).

APPLE APHID (Aphis pomi) - DELAWARE - First specimens of season noted on apple buds in Sussex County, March 30. (MacCreary).

PLANT BUGS (Lygus spp.) - UTAH - Plant bug, largely L. elisus, common in orchards in North Logan, Cache County. (Knowlton).

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - Four adults jarred from 5 trees in Fort Valley area; trees now 50 percent in flower. (Holon, Mar. 25).

APPLE TWIG BORER (Amphicerus bicaudatus) - GEORGIA - Light in peach twigs in Fort Valley area, Peach County. (Pollard).

A SAP BEETLE (Meligethes nigrescens) - OREGON - Feeding in fruit tree blossoms March 29; about 2 weeks earlier than usual. (Larson).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - OREGON - Heavy leaf damage appearing in unsprayed fruit and ornamental trees in Willamette Valley; overwintered larvae noted in newly opening buds week of March 15. (Larson).

ITALIAN PEAR SCALE (Epidiaspis piricola) - CALIFORNIA - Medium on pear trees in San Rafael, Marin County. (Cal. Coop. Rpt.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - ALABAMA - Isolated infestations becoming very active on peaches in Dallas County. (McQueen).

SAN JOSE SCALE (Aspidiotus perniciosus) - FLORIDA - Eggs severe on stem and bark of pear in nursery at Tampa, Hillsborough County. (Hale, Mar. 23).

AN ERIOPHYID MITE (Eriophyes emarginatae) - OHIO - Adults collected from wildgoose plum (Prunus munsoniana) twigs at Mount Airy Arboretum in Cincinnati, Hamilton County, April 1. (Rings). This is a new State record. (ARS).

A FRUIT-TREE MITE (Bryobia rubrioculus) - UTAH - Eggs not numerous in apple orchards examined at North Logan, Cache County. (Knowlton).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Light to heavy on walnut trees in Gustine, Merced County; populations vary on different cultivars. Heavy on almond in Los Banos, Merced County. (Cal. Coop. Rpt.).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - GEORGIA - Moderate on pecans in southern area. (Osborn).

A FALSE POWDER-POST BEETLE (Xylobiops basilaris) - ALABAMA - Girdled and caused breaking of healthy pecan limb; pest usually damages only dying or dead limbs in State. (Bagby).

AN ARMORED SCALE (Aspidiotus lataniae) - CALIFORNIA - Medium on avocado trees in San Diego and heavy on litchi tree nursery stock in Carlsbad, San Diego County. (Cal. Coop. Rpt.).

A SOFT SCALE (Coccus acutissimus) - FLORIDA - All stages moderate to severe on leaves of litchi in nursery at Lotus, Brevard County. (Levan, Mar. 26).

Citrus Insect Situation in Florida - Mid-March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 59 percent of groves (norm 60 percent); 35 percent economic (norm 35 percent). Population near normal moderate level for March. Although general trend is expected to be slightly downward, increase will occur in some groves. Highest districts south, west and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 34 percent of groves (norm 28 percent); 15 percent economic (norm 11 percent). Population slightly above low level normal for March. Gradual increase expected. All districts are low; however, few heavy infestations now present in south and central districts. CITRUS RED MITE (Panonychus citri) infested 32 percent of groves (norm 64 percent); 6 percent economic (norm 36 percent). This mite continues at record low level and little change is expected. Important infestations will be rare in any district. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 11 percent of groves (norm 12 percent); none economic (norm 1 percent). Gradual increase will occur, but few infestations are expected to be important. Little change is expected from the SCALE INSECT situation reported for the end of February. In February, the number of parasitized scales per hundred healthy scales was as follows: 40 parasitized individuals of PURPLE SCALE (Lepidosaphes beckii); 48 parasitized individuals of GLOVER SCALE (L. gloverii); 27 parasitized individuals of CHAFF SCALE (Parlatoria pergandii); 14 parasitized individuals of YELLOW SCALE (Aonidiella citrina); and 17 parasitized individuals of FLORIDA RED SCALE (Chrysomphalus aonidum). Populations of WHITEFLIES will continue above average and in moderate range. An increase is expected in the number of adult whiteflies. APHIDS will increase through April. Population expected to be below average and very few infestations will be important. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred).

CITRUS WHITEFLY (Dialeurodes citri) - FLORIDA - Adults severe on dooryard plantings of Meyer lemon, calamondin, Japanese persimmon and Citrus spp. at Gainesville, Alachua County. (Mead, Mar. 28).

SPIREA APHID (Aphis spiraecola) - FLORIDA - Causing severe distortion to dooryard citrus at Gainesville, Alachua County. (Mead).

COWPEA APHID (Aphis craccivora) - ARIZONA - Infested citrus groves on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increasing on new citrus growth in most areas of Maricopa County. (Ariz. Coop. Sur.).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Heavy on orange trees in Davis, Yolo County. (Cal. Coop. Rpt.).

GRAPE FLEA BEETLE (Altica chalybea) - ALABAMA - First feeding signs on early flower buds observed. Few buds 50 percent or more destroyed. (McQueen).

TRUCK CROP INSECTS

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Increasing nymphal populations becoming hazard to potatoes in Maricopa and Pinal Counties. Some controls required. (Ariz. Coop. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Treatments initiated in western Kern and Kings Counties; 5,347 rangeland acres treated. Populations in area ranged 10-40 per 10 sweeps. No significant population development noted further north. (Cal. Coop. Rpt.).

MELON APHID (Aphis gossypii) - ARIZONA - Increasing rapidly on cantaloups in Yuma and Maricopa Counties. Heavy adult flights becoming general nuisance to homeowners and business establishments in Yuma. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Continues to increase on lettuce and cabbage fields in Yuma and Maricopa Counties; controls necessary in many fields. (Ariz. Coop. Sur.). OKLAHOMA - Light to moderate on commercial spinach checked in Tulsa and Wagoner Counties. (Okla. Coop. Sur.).

CABBAGE APHID (Brevicoryne brassicae) - ALABAMA - This species and Hyadaphis pseudobrassicae (turnip aphid) moderate on leaves of potatoes in Mobile County. (McQueen, Mar. 27).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - ALABAMA - Unusually large number of adults emerged; completely defoliated recently set tomato plants in home garden in Dale County. Recent reports from several counties indicate rather high infestations. (Thomason et al.).

WEEVILS (Brachyrhinus spp.) - OREGON - Larvae of B. sulcatus (black vine weevil) and B. ovatus (strawberry root weevil) heavy in Linn County mint fields but fumigation trials resulted in effective kills. (Morrison).

GREAT BASIN WIREWORM (Ctenicera pruinina) - IDAHO - Larvae collected at soil surface in potato field at Mountain Home, Elmore County. (Edwards).

A GROUND BEETLE (Bembidion sp.) - IDAHO - Collected at soil surface in potato field at Mountain Home, Elmore County. (Edwards).

FULLER ROSE BEETLE (Pantomorus godmani) - CALIFORNIA - Medium on Loganberry plants in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

RASPBERRY CROWN BORER (Bembecia marginata) - OREGON - Damage to untreated blackberry plantings in Marion County extensive. Early instars now feeding at bases of new buds. (Larson).

A MEALYBUG (Rhizoecus kondonis) - CALIFORNIA - Medium on strawberries locally in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

THRIPS - NEW MEXICO - Continue light in most onion fields checked in Dona Ana County; range 2-6 per plant. (N.M. Coop. Rpt.).

ONION MAGGOT (Hylemya antiqua) - COLORADO - Adult bait traps placed at several locations in Vineland area, Pueblo County. Pearl onion cultivation requires close control for this pest; traps to establish adult emergence data for effective controls. (Schweissing, Jenkins).

SPIDER MITES (Tetranychus spp.) - ARIZONA - Controls necessary on spotted infestations on cantaloups in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

TOBACCO INSECTS

MOLE CRICKETS - GEORGIA - Scapteriscus acletus (southern mole cricket) moderate to heavy in transplanted tobacco in Colquitt and Lowndes Counties. (French, Girardeau, Mar. 31). SOUTH CAROLINA - Unspecified species present on tobacco in Florence County. (Nettles et al., Mar. 30).

WIREWORMS - GEORGIA - Damaging several fields of tobacco in southern area. (Miles, Mar. 31).

FLEA BEETLES - SOUTH CAROLINA - Present on tobacco in Florence County. (Nettles et al., Mar. 30).

WHITE GRUBS - SOUTH CAROLINA - Present on tobacco in Berkeley County. (Nettles et al., Mar. 30).

MIDGES - SOUTH CAROLINA - Larvae present on tobacco in Berkeley County. (Nettles et al., Mar. 30).

SNAILS - SOUTH CAROLINA - Present on tobacco in Florence, Georgetown and Clarendon Counties. (Nettles et al., Mar. 30).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Larvae and live pupae taken in screened trash and soil from farm northeast of Mesa, Maricopa County. Three moths emerged from bolls buried 4 inches deep on Cotton Research Center. (Ariz. Coop. Sur.). FLORIDA - Larvae taken on wild cotton (Gossypium hirsutum) at 4 locations; Cape Sable, Monroe County (PPC, Mar. 24); Long Key, Monroe County (Creamer, Mar. 26); Madeira Bay, Dade County (Humphries, Mar. 18); and Sanibel Island, Lee County (Adkins, Mar. 23).

BOLL WEEVIL (Anthonomus grandis) - FLORIDA - Larvae taken on wild cotton (Gossypium hirsutum) at Cape Sable, Monroe County, March 24. (PPC).

A WEEVIL (Anthonomus sp.) - ARIZONA - Adult overwintering weevils still being found in field trash, bolls at ends of cotton fields and bolls lying next to bases of cotton plants in fields in eastern Yuma County. Some adult flight also observed. (Ariz. Coop. Sur., Mar. 19).

THRIPS - ALABAMA - Quite plentiful on new growth of Johnson grass and other native grasses in and around cotton fields in Dallas County. (McQueen).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES - CALIFORNIA - Phloeosinus cupressi larvae and adults heavy in juniper trees in Salinas, Monterey County, and on Monterey cypress in Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt., Mar. 26). Dendroctonus brevicomis (western pine beetle) and Ips spp. (engraver beetles) damaging ponderosa and Jeffrey pine tree stands in Rattlesnake Road area, Sequoia National Forest. About 150 trees killed in groups up to 24 along road. Increasing damage noted. (R. D. Greenborn, USFS). Ips spp. causing severe top damage to ponderosa pine trees in 10-acre area at Dawn area in Sierra National Forest resulting from thinning. (J. P. Harlan, USFS). D. brevicomis, Ips spp. and D. valens (red turpentine beetle) killing about 40 ponderosa pines in area of Old Quincy Ranger Station in Plumas County; trees to be felled and treated. (USFS). Ips confusus (California five-spined ips) medium to heavy on Aleppo and Monterey pines in San Marcos, San Diego County. (Cal. Coop. Rpt.).

WEEVILS - NORTH CAROLINA - Adults, primarily Hylobius pales (pales weevil), caused considerable damage to several hundred acres of pine seedling in Brunswick and Columbus Counties. Adults, thought to be overwintering forms, began feeding on pines in early March. Damage occurred primarily to seedlings in mineral soils and not in organic soils. (H. J. Greene).

PINE BARK APHID (Pineus strobi) - DELAWARE - Fairly numerous on small white pine plantings in northern Kent County. (MacCreary). MARYLAND - Adults actively laying eggs on white pines at College Park, Prince Georges County. (U. Md., Ent. Dept.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - FLORIDA - Generally infesting 25 pine trees in nursery at Davie, Broward County. (Shirah, Dowling, Mar. 23). OHIO - Several heavy infestations noted near Doylestown, Wayne County. (Rings).

JUNIPER WEBWORM (Dichomeris marginella) - NORTH CAROLINA - Infested juniper in Wake County. (Robertson, Mar. 12).

A JUNIPER TWIG MOTH (Periploca nigra) - CALIFORNIA - Heavy and damaging junipers in Hayward, Alameda County. Active early this year and widespread. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - NORTH CAROLINA - Hatched on wild cherry near Wilmington, New Hanover County, March 24. Small webs reported on crab apple trees in Wake County by April 2. (J. E. Green, R. Council).

A LYONETIID MOTH (Bucculatrix albertiella) - CALIFORNIA - Eggs, larvae and pupae medium on California live oak trees in San Diego, San Diego County. (Cal. Coop. Rpt.).

BOXELDER BUG (Leptocoris trivittatus) - COLORADO - Adults numerous in flight along streams in foothills in Larimer County. (Vandermark).

A WHITEFLY (Aleuroplatus coronatus) - CALIFORNIA - Medium on oaks in Oroville, Butte County. (Cal. Coop. Rpt.).

A PHYCITID MOTH (Acrobasis grossbecki) - FLORIDA - Larvae on leaves of Pyracantha sp. at Panama City, Bay County (Albritton), and on Pyracantha sp. at Jacksonville, Duval County (King, Mar. 24).

ROSE APHID (Macrosiphum rosae) - ARIZONA - Moderate to heavy on roses in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.). IDAHO - Active on roses in Caldwell, Canyon County. (Bechtolt, Mar. 5). ALABAMA - Light to medium in Lee County; increasing somewhat slower than other aphid species. (McQueen).

APHIDS - ARIZONA - Aphis nerii (oleander aphid) very heavy on oleanders in Yuma County and in Phoenix area of Maricopa County. (Ariz. Coop. Sur.). NEW MEXICO - Cinara tujafilina very abundant on arborvitae in Las Cruces area, Dona Ana County. (N.M. Coop. Rpt.). ALABAMA - Aphis spiraeicola (spirea aphid) populations continue heavy on all varieties of spirea in Lee County. (McQueen). FLORIDA - Acyrtosiphon pisum (pea aphid) severe on periwinkle at Plant City, Hillsborough County. (Custead, Mar. 26). GEORGIA - Unspecified species heavy on weeping willow and crapemyrtle in Fulton County. (Woodliff, Mar. 26).

AZALEA LACE BUG (Stephanitis pyrioides) - ALABAMA - Early, light damage observed on several isolated azalea plants in Lee County. (Doughty, Ledbetter, Baskin, et al.).

WHITEFLIES - FLORIDA - Adults of Dialeurodes citri (citrus whitefly) severe on leaves of gardenia at Palatka, Putnam County, (Witherington, Mar. 24), and severe on gardenia and Viburnum odoratissimum at Gainesville, Alachua County, (Mead, Mar. 28). ALABAMA - Tetraleurodes mori (mulberry whitefly) nymphs caused considerable defoliation of laurelcherry in Lee County. Adults of unspecified species increased noticeably on gardenia and laurelcherry in same area. (McQueen). UTAH - Unspecified species heavy on house plants in home at Logan, Cache County. (Knowlton, Mar. 30).

A PSYLLID (Pachypsylla celtidisgemma) - COLORADO - Adults emerging from hackberry at Fort Collins, Larimer County. (Thatcher).

COCCIDS - OREGON - Saissetia oleae (black scale) attacked leaves of oleander in Benton County greenhouse. (Larson). CALIFORNIA - Aspidiotus lataniae (an armored scale) heavy on Agave sp. nursery stock in Santa Ana, Orange County. Eriococcus coccineus (a dactylopiid scale) medium on cactus nursery stock in Santa Rosa, Sonoma County. Parlatoria oleae (olive scale) heavy on Heteromeles arbutifolia in Willows, Glenn County. (Cal. Coop. Rpt.). PENNSYLVANIA - Cryptococcus fagi (beech scale) heavy on American beech near Moosic, Lackawanna County. Det. by

G. B. Slesman. (Jeffery). Also collected on beech in Pike, Monroe and Wayne Counties. (Slesman). Lepidosaphes ulmi (oystershell scale) and Lecanium nigrofasciatum (terrapien scale) heavy on red maples near Moosic, Lackawanna County. (Jeffery). NORTH CAROLINA - Ceroplastes sp. (a wax scale) infested Chinese holly in Johnston County. (Robertson). SOUTH CAROLINA - Fiorinia theae (tea scale) unusually abundant on camellia and Burford holly in Clemson area. (Nettles et al., Mar. 30). GEORGIA - Toumeyella sp. (a soft scale) heavy on dogwood tree in De Kalb County. (Tippins, Mar. 19). FLORIDA - All stages of Asterolecanium pustulans (a pit scale) severe on stem of Leucophyllum texanum in nursery at Miami, Dade County. (Herrmann, Mar. 23). This is a new host record for Florida Division of Plant Industry. (Fla. Coop. Sur.). Pinnaspis strachani (an armored scale) adults scattered and moderate and Howardia biclavus (mining scale) severe on Leucophyllum texanum in nursery at Miami. Eucalymnatus tessellatus (a soft scale) moderate on leaves of Rhaphis excelsa and adults of Aspidiotus palmarum severe on leaves of Bromelia spp. in nursery at Miami. (Herrmann, Mar. 26). Aspidiotus destructor (coconut scale) moderate on leaves of Eugenia paniculata in nursery at Davie, Broward County. (Shirah, Dowling, Mar. 23). Saissetia hemisphaerica (hemispherical scale) severe on leaves of queen sago-palm in nursery at Tampa, Hillsborough County. (Hale, Mar. 23).

NATIVE HOLLY LEAF MINER (Phytomyza illicicola) - MARYLAND - Heavy mining observed on several American holly trees at College Park, Prince Georges County. (U. Md., Ent. Dept.).

SPIDER MITES (Tetranychus spp.) - ALABAMA - Multiplying very rapidly; previously damaged azaleas, laurelcherry and some perennial flowering plants in Lee County. (McQueen). ARIZONA - Infestations on hollyhocks and other ornamentals abundant in Maricopa and Pinal Counties. (Ariz. Coop. Sur.). CALIFORNIA - T. merganser medium on privet in Placentia, Orange County. (Cal. Coop. Rpt.).

GARDEN SYMPHYLAN (Scutigerella immaculata) - OREGON - Heavy and damaging nursery planting of dogwood and white birch in Multnomah County. (Nicolaissen).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - FLORIDA - Anopheles crucians abundant near light in Gainesville area, Alachua County. (Esser). NORTH CAROLINA - Aedes canadensis larvae present in puddles around Charlotte, Mecklenburg County. (Ashton). COLORADO - No mosquito larvae found when sampling breeding areas at Fort Collins, Larimer County. (Thatcher). UTAH - Mosquito larvae present in northern section of State. (Knowlton).

CATTLE GRUBS (Hypoderma spp.) - NORTH DAKOTA - Averaged 5 per animal; 60 percent of untreated animals infested. Numbers appear lower than in 1963 and 1964. (Noetzel). OKLAHOMA - Adults of H. lineatum (common cattle grub) moderate to heavy on and around cattle in Comanche County. (Okla. Coop. Sur.). NORTH CAROLINA - H. bovis (northern cattle grub) ranged 0-12 in backs of 5 untreated cattle and zero in 7 other animals examined in Buncombe County. Det. by W. G. Bruce. (Jones, Mar. 22).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

No screw-worm cases were reported from the Southwestern Eradication Area and no cases were reported from any other State in the United States during the period March 28-April 3. The Republic of Mexico reported 45 cases from Sonora, 2 each from Tamaulipas and Puebla, 4 each from San Luis Potosi and Durango, one each from Coahuila and Nuevo Leon, and 8 from Chihuahua. Total of 166,250 sterile flies released in Texas and 83,990,000 in Mexico.

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding weeks in 1963 and 1964 in Southwestern Eradication Area.						
1963	61	243	277	835	22.02	29.10
1964	5	12	230	931	2.17	1.28
1965	0	4	45	615	0.00	.65
Table 2. Comparison of specimens reported during corresponding weeks and in a corresponding area in 1964 in the United States-Mexico Barrier Zone.*						
1964	20	180	53	247	37.73	72.87
1965	57	572	34	367	167.64	155.85
Table 2A. Mexican portion of Barrier Zone only.						
1964	16	167	20	71	80.00	235.21
1965	57	570	17	222	335.29	256.75

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm population in the United States. (Anim. Dis. Erad. Div.).

HORN FLY (Haematobia irritans) - GEORGIA - Averaged 0.3 per animal on untreated herd in Spalding County. (Roberts).

SHEEP KED (Melophagus ovinus) - COLORADO - Reported abundant across State. (Hantsbarger).

CATTLE LICE - GEORGIA - Linognathus vituli (long-nosed cattle louse) and Solenopotes capillatus averaged 4.5 per square inch on cattle in Spalding County and 0.4 per square inch in Putnam County, March 16 and 18. Same two species, with S. capillatus predominant, averaged 7.7 per square inch on untreated herds in Spalding County and 2.3 per square inch in Putnam County, March 30. (Roberts). OKLAHOMA - Several species moderate on cattle in Comanche County. (Okla. Coop. Sur.). NORTH DAKOTA - L. vituli averaged 1 per hair part and Haematopinus eurysternus (short-nosed cattle louse) averaged 9 per hair part on untreated feeder steers at Dickinson, Stark County. Bovicola bovis (cattle biting louse) light to severe at several locations over State. (Noetzel).

TICKS - OKLAHOMA - Ixodes scapularis (black-legged tick) light on dog in Tulsa County and Amblyomma americanum (lone star tick) light on dog in Mayes County. (Okla. Coop. Sur.). NORTH DAKOTA - All stages of Rhipicephalus sanguineus (brown dog tick) were severe in home at Christmas time. (Noetzel).

CAT FLEA (Ctenocephalides felis) - MINNESOTA - Continued troublesome in Minneapolis home after death of cat last fall. (Minn. Ins. Rpt., Mar. 29).

A CHIGGER (Eutrombicula sp.) - OKLAHOMA - Adult found in Wagoner County; first report of season. (Okla. Coop. Sur.).

A BROWN SPIDER (Loxosceles reclusa) - OKLAHOMA - Extremely large population found in garage in Cleveland County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

COCKROACHES - WYOMING - Adult female of Supella supellectilium (brown-banded cockroach) collected in building in Laramie, Albany County. (Lawson). MISSOURI - Several species reported infesting homes in Boone County. (Houser). ALABAMA - Heavy infestations reported in Lee County. Blattella germanica (German cockroach) most numerous. Periplaneta americana (American cockroach) and S. supellectilium of lesser importance. (Walters, Duckett, et al.).

CLOVER MITE (Bryobia praetiosa) - NEW JERSEY - A household pest. (Ins.-Dis. Newsltr., Apr. 2). DELAWARE - Numerous home infestations reported in New Castle County. (MacCreary). MARYLAND - Very numerous about foundation of home in Carrollton, Prince Georges County. (U. Md., Ent. Dept.). SOUTH CAROLINA - Extremely numerous in home in Anderson County. (Nettles et al., Mar. 23). UTAH - Entering homes in Provo-Spanish Fork area of Utah County and Ogden-Taylor area of Weber County. Active on lawns and entering homes at North Logan, Cache County. (Knowlton). IDAHO - Very heavy in home at Caldwell, Canyon County. (Bechtolt).

BANDED HICKORY BORER (Chion cinctus) - NORTH CAROLINA - Adults found in home in Mecklenburg County. Det. by D. A. Mount. (Hutchcraft, Mar. 25).

A CERAMBYCID BEETLE (Eudermes pini) - NORTH CAROLINA - Adults found in woodwork of home in Sampson County. Det. by D. A. Mount. (Peterson, Margan, Mar. 24).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - ALABAMA - Isolated severe infestation in ash lumber at mill in Florala, Covington County. Further infestations expected. (Stephenson).

FALSE WIREWORMS (Eleodes spp.) - IDAHO - A nuisance in basement at Nampa, Canyon County. (Bechtolt, Mar. 4).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - NEBRASKA - Found in residence in Douglas County in March. (Rhine).

BOXELDER BUG (Leptocoris trivittatus) - UTAH - Active, but not numerous, about homes at North Logan, Cache County. (Knowlton). PENNSYLVANIA - Nuisance in home in Harrisburg. (Jeffery).

CLUSTER FLY (Pollenia rudis) - UTAH - Entered homes in communities in northern part of State. Numerous at North Logan, Cache County. (Knowlton) WISCONSIN - Inquiries received and specimens reported. (Wis. Ins. Sur.).

INDIAN-MEAL MOTH (Plodia interpunctella) - PENNSYLVANIA - Present in home in Erie County. (Adams).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - MARYLAND - Winged forms swarming in Prince Georges and Somerset Counties. (U. Md., Ent. Dept.). UTAH - R. hesperus (western subterranean termite) damaging additional home at Logan, Cache County. (Knowlton).

TERMITES - COLORADO - Winged forms emerging in Fort Collins, Larimer County. (Hantsbarger). NEW JERSEY - Swarming and causing inquiries. (Ins.-Dis. Newsltr., April 2).

ANTS - NORTH CAROLINA - Acanthomyops interjectus (larger yellow ant) swarmed in basement of home in Caldwell County. (Mount, Mar. 26). MISSOURI - Unspecified species active in homes in Boone County. (Houser). OREGON - Prenolepis imparis winged adults emerged from ground in large numbers in western section. (Larson).

A CLUBIONID SPIDER (Cheiracanthium mildei) - OHIO - Recently appeared in Columbus, Franklin County. (Gertsch, Knoll).

STORED-PRODUCT INSECTS

POTATO TUBERWORM (Gnorimoschema operculellum) - MARYLAND - Infested seed potatoes in building at Mechanicsville, St. Marys County. (U. Md., Ent. Dept.). DELAWARE - Heavy in farm storage in Sussex County. (Boys).

CADELLE (Tenebroides mauritanicus) - NEBRASKA - Boring into sides of farm grain bin in Cedar County. (Rhine).

A SPIDER BEETLE (Ptinus sp.) - INDIANA - Light in fruit cellar where onions, potatoes and flower bulbs stored in Chesterton, Porter County. (Matthew).

BENEFICIAL INSECTS

LADY BEETLES - NEVADA - Heavy in alfalfa in Churchill and Douglas Counties. (York). ILLINOIS - Hippodamia convergens (convergent lady beetle) and H. parenthesis adults averaged less than 0.5 per 100 sweeps in alfalfa in southeast and southwest districts. (Ill. Ins. Rpt.).

GREEN LACEWINGS (Chrysopa spp.) - COLORADO - Adults reported in flight. Attracted to lights in Fort Collins, Larimer County. (Simpson).

PARASITIC HYMENOPTERONS - ARKANSAS - Becoming active. Parasitized aphids found in few instances where aphids present. (Ark. Ins. Sur.).

MISCELLANEOUS INSECTS

GIANT WATER BUG (Lethocerus americanus) - ALABAMA - Unusual heavy emergence of adults attracted to lights at home in Elmore County. (Morriss). GEORGIA - Numerous specimens submitted for determination. (Coleman).

A PHANTOM MIDGE (Chaoborus annulatus) - FLORIDA - Collected at light in Gainesville, Alachua County. (Esser).

AN ANT (Paratrechina melanderi) - CALIFORNIA - Medium on concrete pavement in Chico, Butte County. This is a new county record. Previously known in Imperial County. (Cal. Coop. Rpt.).

VESPID WASPS - UTAH - Active in Salt Lake City, Salt Lake County; Provo, Utah County; Ogden, Weber County; and in Cache County. (Knowlton).

A SCARAB (Aphodius distinctus) - IDAHO - This and 2 other species collected at soil surface in potato field at Mountain Home, Elmore County. (Edwards).

CORRECTIONS

CEIR 15(13) 243 - A CRYPTOPHAGID MOTH (Pharaxonotha zamiae) should read A CRYPTOPHAGID BEETLE (Pharaxonotha zamiae)

CEIR 15(13):244 - COCCIDS - Lines 19 and 20 - Conchaspis argraeci should read Conchaspis angraeci....

CEIR 15(13):247 - LARGER YELLOW ANT (*Acnathomyops interjectus*) should read (*Acanthomyops interjectus) ...*

CEIR 15(13):266 - STRIPED CUCUMBER BEETLE (*Acalymma vittata*) should read (*Acalymma vittatum*)

CEIR 15(13):269 - STRAWBERRY WEEVIL (*Anthomomus signatus*) should read (*Anthonomus signatus*)

CEIR 15(14):279 - *Brachyrhinus ovatus* (strawberry weevil) should read *B. ovatus* (strawberry root weevil).

LIGHT TRAP COLLECTIONS

LIGHT TRAP COLLECTIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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				Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Choristoneura (army cutworm)	Setigera acris (salt-marsh caterpillar)	Farona diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm)	Loxostege compositella (cabbage looper)	Loxostege sticticalis (beet webworm)	Loxostege sticticalis (beet webworm)	Ostinia nubilalis (European corn borer)	Pristionotus (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Protoparce quinquemaculata (tomato hornworm)	Protoparce sexta (tomato hornworm)	Pseudococcyx (armyworm)	Spodoptera unipuncta (beet armyworm)	Spodoptera eximia (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Triphleps ni (cabbage looper)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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* BL = blacklight; I = incandescent; MV = mercury vapor; O = other
 ** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn;
 grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pea = peanut; pepp. = pepper; pot. = potatoes;
 SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed);
 tob. = tobacco; tom. = tomato.

Report on Survival of Boll Weevil as Determined by Surface Trash
Examinations During the Spring - 1965

Spring collections of surface ground (woods) trash samples (two square yards per sample) have been completed in four Southern States and in three counties of Alabama. Wherever possible, samples were taken from the same locations that were sampled in the fall of 1964. The number of live boll weevil (*Anthonomus grandis*) adults per acre of ground trash examined and the percent survival are reported in the following paragraphs. For details of the fall (1964) hibernation survey in these five States, see CEIR 15(1):10-12.

In NORTH and SOUTH CAROLINA, samples were taken during the period March 9-18 in the same three representative areas in which fall examinations were made in 1964. In each area, a total of 30 locations (farm sites) was sampled with 3 samples from each location. The areas are as follows: South central South Carolina (Orangeburg, Dorchester and Bamberg Counties), Coastal Plain of South and North Carolina (Florence, Darlington and Marlboro Counties, S.C., and Scotland County, N.C.), and north central North Carolina (Nash, Wilson, Franklin and Edgecombe Counties). The average number of live weevils per acre in these areas was 1,855, 10,164 and 1,371, respectively. The percent survival for these areas was 24.2, 66.9 and 41.4, respectively. The percent survival was lowest in south central South Carolina and was highest in the Coastal Plain of South and North Carolina. In Florence County, South Carolina, an average of 14,795 weevils per acre was found for the spring of 1965 with a winter survival of 83.1 percent. The number of weevils surviving in Florence County is 5.7 times the number surviving in 1964. (Taft, Hopkins).

Spring trash examinations were made in ALABAMA from March 1 to April 2 in 3 of the 4 counties surveyed in the fall of 1964. Examinations in Dallas County are to be completed at a later date. The number of live weevils per acre in the 3 counties completed was 162 in Morgan County, 3,230 in Henry County and 1,080 in Tuscaloosa County. Survival counts are considerably higher than in 1964. The more important observation is that an average of 162 live weevils survived per acre of surface trash in Morgan County, compared with zero in 1964.

Collections were started on February 24 in MISSISSIPPI and all examinations were completed on March 11. Three samples were taken from each location and either 7 or 8 locations were sampled in each county. Four counties made up each area and the State was divided into four areas as follows: Area 1 - lower delta (Sharkey, Issaquena, Yazoo and Humphreys Counties); Area 2 - central delta (Washington, Bolivar, Sunflower and Leflore Counties); Area 3 - north delta (Coahoma, Tunica, Quitman and Panola Counties); Area 4 - hill section (Holmes, Madison, Noxubee and Monroe Counties). Ninety samples were taken from a total of 30 locations in each of the four areas. The average number of weevils found per acre in Areas 1, 2, 3 and 4 was 1,129, 1,640, 296 and 914, respectively. The State average was 995 compared with 289 in 1964, 13 in 1963, 1,132 in 1962, 1,246 in 1961, 821 in 1960, 464 in 1959, and 392 in 1958. The percent survival in Areas 1, 2, 3 and 4 was 17.80, 31.28, 8.73 and 30.91, respectively. The State average (percent survival) was 22.19 compared with 9.68 in 1964, 0.2 in 1963, 13.59 in 1962, 8.59 in 1961, 16.23 in 1960, 12.22 in 1959 and 6.65 in 1958. (Pfrimmer).

In central TEXAS, spring collections were made March 4-11. Three samples were taken from each location and 6 or 7 locations were sampled in each county. The average number of weevils found per acre in Falls, Hill, Limestone and McLennan Counties in the spring of 1965 was 3,629, 3,360, 5,502 and 6,785, respectively, with an area average of 4,925. This compares with 2,285, 2,957, 5,502 and 6,640 found in these respective counties in the fall of 1964, with an average of 4,406 weevils per acre for the area. The survival percent was 100. This compares with survival counts of 31.1, 33.7, 33.1, 25.4 and 18.8 percent in March of 1960, 1961, 1962, 1963 and 1964, respectively. The increase in numbers of boll weevil entering hibernation in the fall of 1964 was due primarily to late stalk destruction and farm cleanup. This resulted in more weevils being

found in the fall inspections than in the previous 4 years. The indicated spring survival was extremely high. More weevils were found in the spring of 1965 than in any year since trash examinations were started. More weevils were found in Hill, Falls and McLennan Counties in the spring of 1965 than in the fall of 1964. The same number of weevils was found in Limestone County this spring as were found last fall. (Cowan).

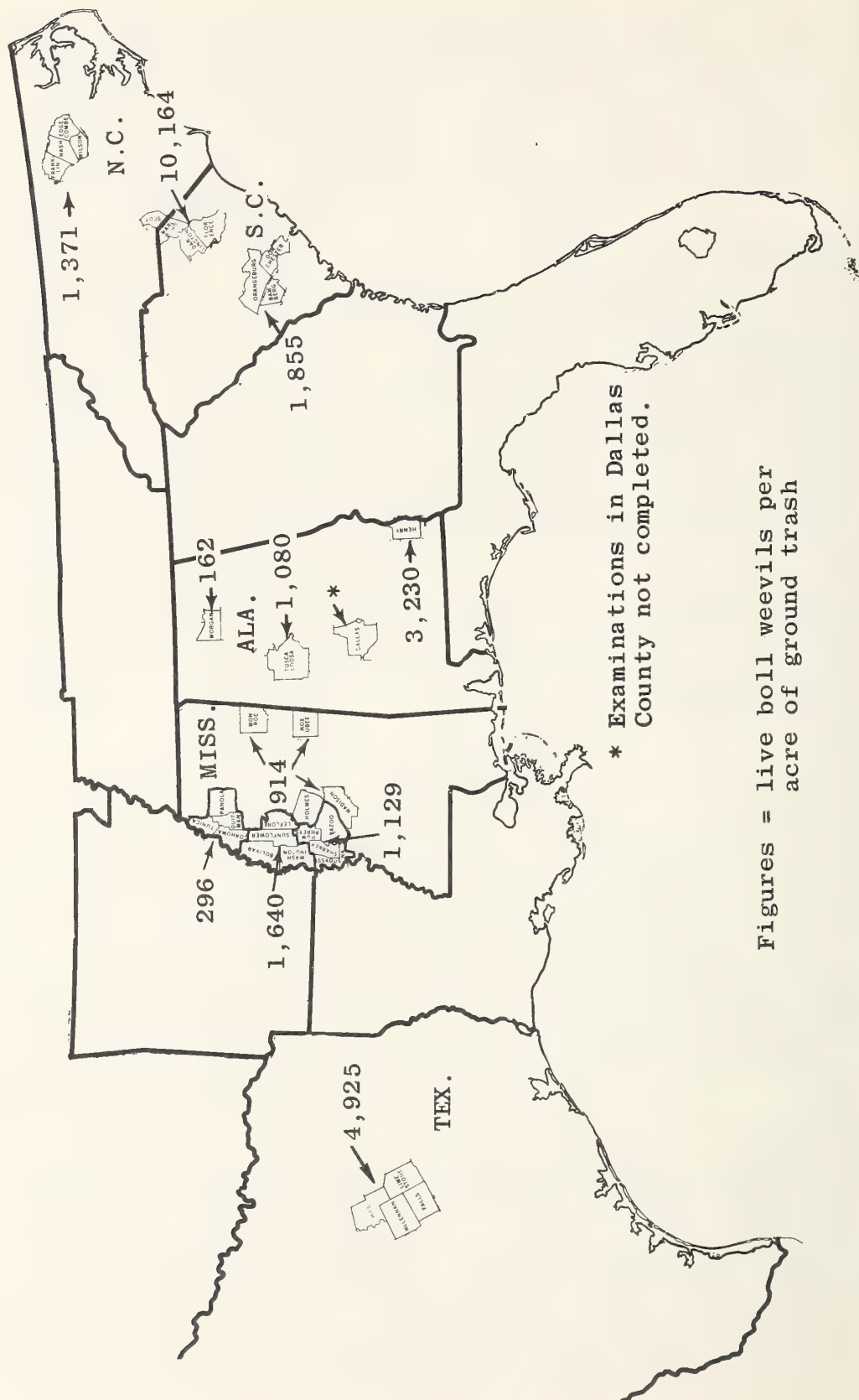
BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1965

Area (County and State)	Number of Weevils Per Acre	
	1964	1965
<u>NORTH and SOUTH CAROLINA</u>		
South Central South Carolina (Orangeburg, Bamberg and Dorchester Counties)	753	1,855
Coastal Plain of South and North Carolina (Florence, Darlington and Marlboro Counties, S.C.; Scotland County, N.C.)	2,742	10,164
North Central North Carolina (Franklin, Nash, Wilson and Edgecombe Counties)	107	1,371
<u>ALABAMA (incomplete)</u>		
Henry County	537	3,230
Tuscaloosa County	81	1,080
Morgan County	0	162
<u>MISSISSIPPI</u>		
Lower Delta (Sharkey, Issaquena, Yazoo and Humphreys Counties (area 1))	753	1,129
Central Delta (Washington, Bolivar, Sunflower and Leflore Counties (area 2))	108	1,640
North Delta (Coahoma, Tunica, Quitman and Panola Counties (area 3))	188	296
Hill Section (Holmes, Madison, Noxubee and Monroe Counties (area 4))	108	914
<u>TEXAS</u>		
Central (Falls, Hill, Limestone and McLennan Counties)	97	4,925

See map on following page.

BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1965

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Figures = live boll weevils per acre of ground trash

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

IN Arizona
(State or District)DURING 1964
(Year)ATTACKING Corn (grain)
(Commodity or Crop)

A. Pest or pest complex: Corn leaf aphid, cutworms, flea beetles, corn earworm, armyworms, corn rootworms

B. Number of acres ^a produced (From CRS)	No.	16,000
C. Average yield per acre ^a (From CRS)	Units/	30 bu.
D. Price ^b per unit (bu.) ^c (From CRS)	\$/	1.62
E. Acres ^a needing control	No.	14,000
F. Acres ^a treated	No.	7,000
G. Reduction due to not treating where needed:		
H. Loss in yield, percent	%	15
I. Loss in yield, units per acre ^a , C x H	Units/	4.5 bu.
J. Loss in yield, \$ per acre ^a , D x I	\$/	7.29
K. Loss in quality, \$ per acre ^a	\$/	----
L. Yield loss for all acres ^a , (E-F) x I	Units	31,500 bu.
M. Control cost, \$ per acre ^a	\$/	3.50
N. Control cost for all acres ^a , F x M	\$	24,500
O. Yield loss for all acres ^a , (E-F) x J	\$	51,030
P. Quality loss for all acres ^a , (E-F) x K	\$	----
Q. Combined control cost and losses, N + O + P	\$	75,530
R. Percent loss due to each insect in the complex:		

Comment: Estimated savings - \$51,030

- a. Acres, head of cattle or other producing units used by Crop Reporting Service.
- b. Season average price per unit as given by CRS (describe basis).
- c. Bushels, boxes, tons or other marketing units used by CRS; show which in ().

Submitted by Dale Fullerton
Date March 9, 1965ATTACKING Corn (silage)
(Commodity or Crop)

A. Pest or pest complex: Corn leaf aphid, cutworms, flea beetles, corn earworm, armyworms, corn rootworms

B. Number of acres ^a produced (From CRS)	No.	8,000
C. Average yield per acre ^a (From CRS)	Units/	18 tons
D. Price ^b per unit (ton) ^c (From CRS)	\$/	15.00
E. Acres ^a needing control	No.	7,000
F. Acres ^a treated	No.	3,000
G. Reduction due to not treating where needed:		
H. Loss in yield, percent	%	15
I. Loss in yield, units per acre ^a , C x H	Units/	2.70 tons
J. Loss in yield, \$ per acre ^a , D x I	\$/	40.50
K. Loss in quality, \$ per acre ^a	\$/	----
L. Yield loss for all acres ^a , (E-F) x I	Units	10,800 tons
M. Control cost, \$ per acre ^a	\$/	3.50
N. Control cost for all acres ^a , F x M	\$	10,500
O. Yield loss for all acres ^a , (E-F) x J	\$	162,000
P. Quality loss for all acres ^a , (E-F) x K	\$	----
Q. Combined control cost and losses, N + O + P	\$	172,500
R. Percent loss due to each insect in the complex:		

Comment: Estimated savings - \$121,500

- a. Acres, head of cattle or other producing units used by Crop Reporting Service.
- b. Season average price per unit as given by CRS (describe basis).
- c. Bushels, boxes, tons or other marketing units used by CRS; show which in ().

Submitted by Dale Fullerton
Date March 9, 1965

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1964
(continued from page 296)

INSECTS AFFECTING MAN AND ANIMALS

Highlights

MOSQUITOES and other FLIES were the major causes of annoyance to man and animals throughout the Nation. Mosquitoes caused particular apprehension in States reporting encephalitis cases even though the numbers and annoyance levels were reduced owing to drought. Rainfall deficiency did not appreciably reduce the annoyance level in some areas, however. Man-created environments such as catch basins, lagoons and other water-holding structures provided breeding places where natural water was low or absent. Natural water in the form of snow pools, tidewater and stream flooding was a factor in controlling populations of mosquitoes. FACE FLY was reported in Montana and Alabama for the first time in 1964. Difficulty with the pest was greatest in States where it has been established for a number of years. States along the western limit of known distribution (see map page 319) continued to have few or no problems with face fly. HORN FLY was locally heavy in nearly every State reporting this pest. STABLE FLY and CATTLE GRUBS caused considerable difficulty on both dairy and beef cattle over the Nation. Reports of high cattle grub activity in Indiana during the summer of 1964 indicate that grubs will again be heavy during the winter of 1964-65. The SCREW-WORM eradication efforts in Southwestern United States have been remarkably successful. The incidence of screw-worm infested cattle has been reduced 99.9 percent in the 5-State area undergoing sterile screw-worm drops. TICKS, primarily AMERICAN DOG TICK and BROWN DOG TICK, caused considerable concern throughout the Nation but there were no cases of diseases transmitted by these two species reported. A CANARY LUNG MITE (*Sternostoma tracheacolum*) is apparently more prevalent in California and in 1964 caused several losses in that State. CATTLE LICE required constant attention to keep populations low on cattle. BLACK WIDOW SPIDER and a BROWN SPIDER (*Loxosceles reclusa*) were reported more frequently than in the past. *L. reclusa* was reported for the first time in one new parish in Louisiana and two counties in Illinois during 1964.

MOSQUITOES, mainly snow pool *Aedes* spp., were generally heavy throughout MAINE. Spring flood pools in VERMONT had normal populations of *Culex* spp. and *Aedes* spp. but spring flood lands did not materialize to the normal extent and floodwater mosquitoes were not so abundant as in wetter years. Adult mosquitoes persisted at annoyance levels most of the summer in Vermont. The usual spring abundance of mosquitoes was noted in RHODE ISLAND. Some decline occurred during the summer dry period and fall activity was negligible in Rhode Island. Mosquitoes in CONNECTICUT were variable due to dry spells and they were less abundant than usual in PENNSYLVANIA. Despite the deficiency in rainfall (more than an 11-inch departure from the long-term mean) in DELAWARE, several periods of mosquito annoyance were evident during July and August. In Kent and Sussex Counties, flooding of the salt marshes by tides produced several large broods of SALT-MARSH MOSQUITO (*Aedes sollicitans*). In New Castle County, heavy showers were sufficient to cause emergence of floodwater species, especially *A. vexans*, and pools along flood plains, in ditches, catch basins and other places remained long enough in some areas for *Culex* spp. to emerge. *Culex* spp. became a problem in a number of areas in Delaware where food processing plants use lagoons or open fields to dispose of wash water. Outbreak numbers of salt-marsh mosquito were present on the lower Eastern Shore of MARYLAND during June and July but it was not the usual problem in late summer. *Aedes* spp. and *Culex* spp. were common and annoying at times during the season in several areas of Anne Arundel and Prince Georges Counties, Maryland. Salt-marsh mosquito and *Aedes taeniorhynchus* increased rapidly along the coast of NORTH CAROLINA during the

week of July 19. Three hundred larvae per dip were recorded in one area of Pamlico County; however, mosquito populations were only moderate throughout the season in North Carolina.

There were 4 confirmed cases of arthropod-borne encephalitis in humans in FLORIDA in 1964. All 4 cases were due to eastern encephalitis virus; 2 cases were fatal. From January through November, 111 cases of equine encephalitis were reported to the Florida State Board of Health as indicated by the board's monthly animal morbidity report. The year 1964 showed an upswing in the irregular epizootic cycles of eastern encephalitis virus in horses. The last major peak in Florida was in 1957 when 386 cases were reported in horses. In the Tampa Bay area, there were 68 cases of St. Louis encephalitis in 1959; 25 in 1961 and 222 in 1962. There have been no cases confirmed since that time. Serological surveys of humans in the Tampa Bay area who were not known to have encephalitis, form the basis for estimating that 55,000 persons have had a "silent" or inapparent infection with the St. Louis encephalitis virus. The actual percentages of the affected population ranges from 3 percent in the Bradenton-Sarasota area to 8-12 percent in the Clearwater-St. Petersburg area. Sentinel chickens used in bait traps since February 1963 failed to give any evidence of infection with St. Louis encephalitis virus in the ensuing period in the Tampa Bay area. Serological studies of chicken blood are necessary to detect evidence of the disease. Mosquitoes collected by all methods used by the Board of Health personnel in the Tampa Bay area during 1964 totaled 234,239 specimens. Of this total, 133,724 were Culex nigripalpus; 16,135 were Aedes infirmatus; 8,368 were Anopheles crucians; 5,411 were Culiseta melanura and 3,430 were Aedes atlanticus/tormentor. These named species all yielded virus isolations at certain times during 1964. The monthly combined totals for all species became greatest in July, August and September with the yearly peak occurring in September.

Various mosquito species and Musca domestica (house fly) continued to be the major insect problem to humans in ALABAMA. Salt-marsh mosquito, and other mosquitoes, were constant pests during the summer months from the coastal area to the Tennessee Valley. Although present throughout Alabama, most real concern about mosquitoes developed in the coastal areas of Mobile and Baldwin Counties and extended generally along rivers where large bodies of water are impounded. The constant annoyance of mosquitoes invading homes and recreational buildings and outdoor areas during the summer was statewide and not necessarily just in main stream or impounded lake areas of Alabama. Mosquito populations were much lower than the outbreak numbers of 1963 in LOUISIANA. Annoying populations of several species developed in some areas during the year. Aedes vexans, A. infirmatus, Psorophora ciliata and P. ferox were especially abundant following Hurricane Hilda in early October.

Several species of mosquitoes were reported from most areas of TEXAS and OKLAHOMA. In the latter State, populations were extremely heavy in many areas. Dominant species in Payne County, Oklahoma, were Culex tarsalis, COMMON MALARIA MOSQUITO (Anopheles quadrimaculatus) and Psorophora confinnis. Many species were still active in November in Oklahoma. Mosquitoes drew more attention than normal in KANSAS due to concern about encephalitis. The usual SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) and C. tarsalis populations were present. Adult and larval surveys conducted at recreational lake areas in the southern half of MISSOURI indicated low mosquito populations. This was due to the low water level which restricted the number of favorable breeding sites at these lakes. Mosquitoes were reported in several areas of ILLINOIS by May 20. Populations apparently remained high throughout the season. A few cases of encephalitis were reported in both humans and horses in Illinois.

In OHIO, the Toledo Area Sanitary District reported the most important mosquito species in decreasing order of importance were Culex pipiens, Aedes vexans, C. restuans, C. territans, A. triseriatus and A. stimulans. Lower than usual mosquito numbers were present in MICHIGAN in the spring. A generally low

water table was considered responsible. Aedes spp. and Culex spp. caused annoyance over Michigan during periods in the summer. Mosquitoes, primarily Aedes vexans, were troublesome near the end of May in WISCONSIN but they became less bothersome late in the summer. Some increase occurred in the fall but not so much as in previous years.

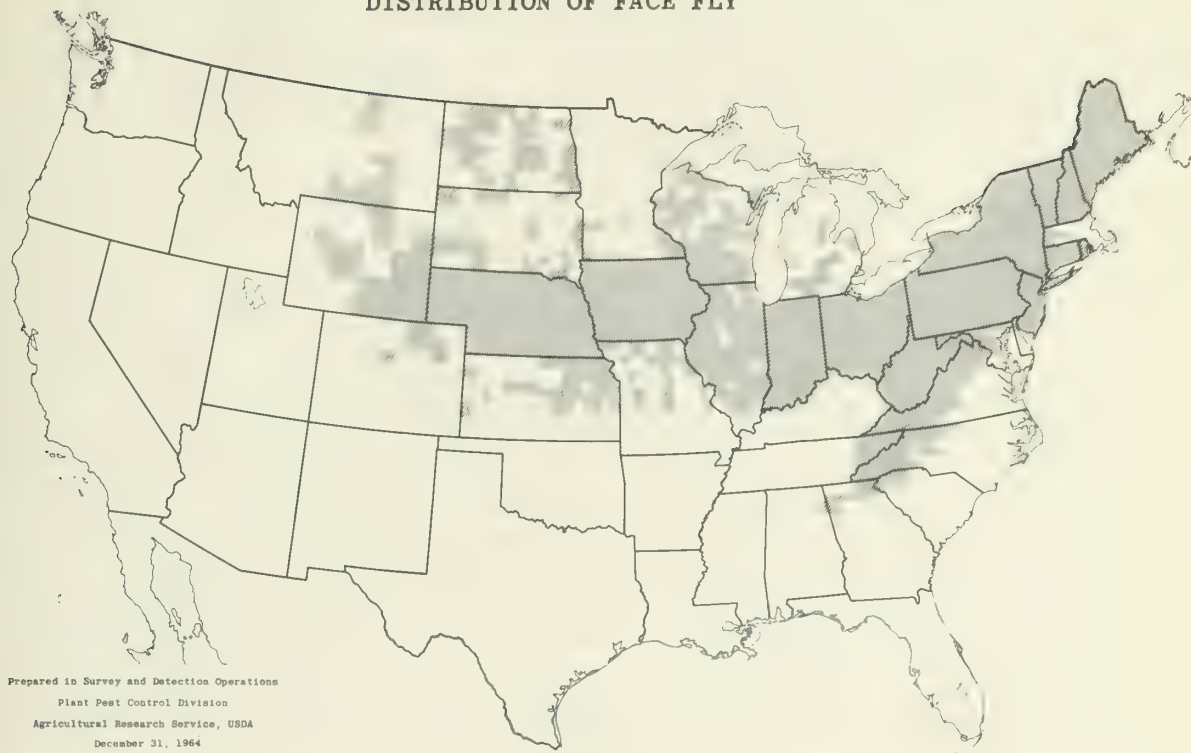
Larval mosquito collections in the Minneapolis-St. Paul area of MINNESOTA in the first half of May included Aedes vexans plus several other early spring species such as Aedes cinereus, A. excrucians, A. canadensis, A. fitchii and A. abserratus. Adults of Culiseta inornata and a few A. vexans occurred May 17. Heavy emergence from flooded rivers in the Minneapolis-St. Paul area occurred about May 24. FLOODWATER MOSQUITO (A. sticticus), a species that breeds in floodwater plains, increased in importance in early June although A. vexans continued to be predominant both in light trap and bite collections. Mansonia perturbans, a cattail and sedge swamp breeder, began to appear in the latter part of June and continued troublesome through July and into August. Flooding rains in June in the Valley of the Red River of the North brought on tremendous populations of mosquitoes and numerous inquiries from municipalities on control measures. A population peak comprised mainly of A. vexans occurred July 22 in the Minneapolis-St. Paul area as indicated by light trap collections. Cool temperatures beginning in mid-August reduced mosquito activity. Heavy rains produced a moderate brood which emerged over the Labor Day weekend. Control efforts of the 6-county Metropolitan Mosquito Control District during the season were generally quite successful in keeping the mosquito nuisance at a low level. The noticeable exception was the movement into the district of mosquitoes developing on the flood plains of the St. Croix, Mississippi and Minnesota Rivers.

Mosquitoes were abundant over NORTH DAKOTA. Aedes vexans and A. dorsalis were the dominant species. A. nigromaculis was abundant in some western areas. Mosquitoes caused considerable discomfort to humans and livestock in North Dakota. Mosquitoes were annoying to livestock and humans in COLORADO where Aedes spp., Culex spp. and Anopheles spp. were involved. Mosquito populations remained approximately the same in WYOMING as those found in 1963. Considerable annoyance was inflicted on man and other animals by the presence and feeding activity of these pests. Only moderate success was realized from control measures applied by some cities and towns in Wyoming. Mosquitoes were more abundant in the spring and early summer than normal in UTAH; they were numerous in many areas of NEVADA also, but populations were below the 1963 level which was the heaviest in 5 years.

Catches of greater than 15 Culex tarsalis adults per night were noted in 2 mosquito abatement areas in Tehama and Glenn Counties of CALIFORNIA. Adult occurrences of all mosquito species were noted to be greater than 15 per night in Tehama, Glenn and Colusa Counties. Aedes nigromaculis developed enormous numbers in flooded pastures in Grant County, WASHINGTON, by late June. For the second consecutive year, mosquitoes continued to bite until early August in ALASKA instead of diminishing in mid-June as they have for years in the south central area.

FACE FLY (Musca autumnalis) was found in MONTANA for the first time in 1964. Face fly was expected to cause much annoyance to livestock in WYOMING after having come into the State in 1961 but it has not yet become a problem. A few unconfirmed reports were received in 1964, but no collections of this species were made in Wyoming. This was an annoying pest of livestock in COLORADO. It was present in normal numbers in KANSAS. Some damage and problems were encountered in NEBRASKA on cattle; however, the infestations and problems did not appear to be so severe as the 1961, 1962 and 1963 seasons. Early populations of face fly in SOUTH DAKOTA were generally quite light with a gradual increase of adults in midseason. During the last half of the grazing season, fly populations became quite high and caused discomfort to cattle in feedlots and on the range. Face fly numbers were down in NORTH DAKOTA from the past few years.

DISTRIBUTION OF FACE FLY



Face fly activity was observed in WISCONSIN in mid-May. It was soon troublesome in Sauk and Grant Counties and later over most of the State. Face fly was particularly troublesome in Bayfield and Ashland Counties, reportedly causing blindness in some cattle. Reports of activity in Wisconsin were received until late September. The first specimens of the season in ILLINOIS were observed on cattle in Mercer County May 5. Populations were rather low through June and July, usually varying 0-7 per face. The heaviest populations of the season were observed August 3-6 when numbers in the northern half of Illinois were 0-67 (average 14.5) per face with many flies clustered on the backs and sides of the animals in the most heavily infested herds. Overwintering populations in INDIANA gave indications of high summer numbers during 1964 but these highs did not materialize and face fly numbers remained very low until early September when they reached highs of 30-35 per head. Face fly remained at this level for only 2 weeks then dwindled rapidly. High summer face fly populations occurred only in the eastern half of Indiana, primarily from U.S. Highway 40 northward. Up to 25 or more adults per animal were observed May 3 on backs of dairy animals in Shiawassee County, MICHIGAN. The exudate caused by Hypoderma spp. (cattle grubs) served as an attractant. Face fly was relatively low in Michigan on beef and dairy animals during the summer.

Face fly infestations ranged 0-50 per animal with an estimated average of 20 per animal in GEORGIA. This fly has been found in several additional counties; the known outer limits of counties infested in Georgia are Polk and Stephens. Face fly was the only new livestock pest entering ALABAMA for the first time in 1964. It was located in several herds in Cherokee County along the Alabama-Georgia State line. Sufficient surveys have not been made to determine the entire infested area in Alabama. Face fly was reported to be a nuisance in a Yancey County home and a Buncombe County community about January 27 in NORTH CAROLINA. Populations were about the same as in 1963, which was relatively low. Face fly is still a problem only in the mountain counties of North Carolina. Face fly caused considerable irritation to livestock throughout VIRGINIA. Numbers were somewhat below normal on dairy and beef cattle in the central

counties of MARYLAND. It was present in PENNSYLVANIA but in fewer numbers than in 1961. Numbers were much lower in NEW YORK than they were in 1959 and 1961. The annoyance there was limited by the lack of hot, humid weather. Face fly was a serious nuisance to heifers in summer pastures in MASSACHUSETTS. In one instance, blindness resulted and in others, serious eye problems developed. High face fly populations were noted in all areas of VERMONT, but populations were generally near the normal level throughout MAINE.

LITTLE HOUSE FLY (*Fannia canicularis*) adults were "overrunning" a poultry (egg) house and its neighborhood in Augusta, MAINE, in mid-April.

HOUSE FLY (*Musca domestica*) was abundant in barns with poor sanitation and poor insecticide use in NEW YORK. Wherever good insecticide use was practiced, numbers were low as weather was not conducive to excessive populations in New York. House fly was less abundant than usual in PENNSYLVANIA. Populations were at troublesome levels in OHIO throughout the summer. House fly continues to be a problem in caged layer houses in NORTH CAROLINA and activity in homes was reported as late as early November in Wake County. House fly was a serious pest of swine around breeder pens. Populations in LOUISIANA were normal to lower than usual. House fly activity started during early April in OKLAHOMA but counts did not become heavy until mid-June. Numbers began to decrease in mid-October but activity continued until early December. In MISSOURI, this fly was annoying to man and other animals. It caused the usual complaints in KANSAS where it was present in normal numbers. Heavy populations were troublesome in farmyards and feedlot areas in NEBRASKA in August and September. House fly was annoying to livestock and humans in COLORADO. Populations were especially high in the southern counties of NEVADA starting in June. High numbers of adults caused much concern to urban and rural residents in WYOMING in 1964. Large populations invaded homes, barns and milking parlors in all areas of State, particularly in late August. In NORTH DAKOTA, populations built up to moderate to heavy in the southeast.

HORN FLY (*Haematobia irritans*) followed the usual pattern of building up to moderate numbers of 100-300 or more per animal on untreated herds in Lower MICHIGAN. Buildup occurred in the spring and persisted until autumn. Heavy populations occurred on beef cattle in many counties in southwestern OHIO in June and July. Populations were much lower in INDIANA in 1964 than during the preceding year. Even on untreated animals, numbers rarely reached 50 per head in the central area. Populations were higher in the southern part of Indiana during late August, reaching 250 per head for a period of one month. Horn fly was fairly abundant in ILLINOIS; the highest populations observed were 50-1,000 (average 400) per animal on cattle in the southeast district June 29-July 2. This was the most troublesome insect on animals in MISSOURI during 1964. Counts from June to October ranged 200-400 or more per animal on untreated herds in Missouri. Horn fly was light during the dry summer in ARKANSAS but became heavy with the advent of August rains. The first seasonal record was February 8 in dairy barns in southwest. Flies were active on warm days in northwest Arkansas by late March. Populations in LOUISIANA were about normal although a few heavy populations were observed in isolated areas.

Horn fly became active in mid-March in OKLAHOMA but remained light until early May. Populations increased throughout May and June reaching a peak in early July. Counts declined, remaining at light to moderate levels until heavy populations again reached a peak in early September. Populations declined by early October but flies remained active until late November in Oklahoma. Averages ranged from 25 to 300 per animal throughout the season in NEBRASKA but some infestations were as high as 1,500 per animal. Early populations were generally quite light in SOUTH DAKOTA with a gradual increase in numbers in midseason. During the last half of the grazing season, populations became quite high and caused discomfort to cattle in feedlots and on the range in South Dakota. Horn fly was light to moderate in most areas of NORTH DAKOTA.

Horn fly populations were larger than those found in 1963 in WYOMING, causing considerable annoyance to cattle in all areas. Some control was done with sprayers and backrubbers, but the population remained large in Wyoming. Horn fly was annoying to livestock in COLORADO. Infestations in UTAH were lighter than normal in Iron County. They were about average in NEVADA, but in some areas, infestations were heavier than normal. Horn fly populations were about normal in WASHINGTON; this is one of the major pests of cattle in that State.

Horn fly was less annoying than usual in NEW YORK during 1964. It was again a distinct season-long problem on dairy and beef cattle in all sections of MARYLAND. In VIRGINIA, this fly appeared quite heavily on herds in one section. Infestations were light to heavy in GEORGIA where populations of 30 per animal in mid-April built up to 1,000 per animal in midsummer. There was little change on cattle in FLORIDA.

STABLE FLY (*Stomoxys calcitrans*) populations were normal to lower than normal in LOUISIANA. Average populations persisted in ARKANSAS until heavy August rains when numbers increased. Stable fly became active in mid-May in OKLAHOMA but remained low to moderate until early July, when populations began to increase. Counts were moderate to heavy through July but decreased during August. Heavier counts were again present during September and October in Oklahoma. Stable fly began pestering cattle early in KANSAS and continued as a pest until late in the season. In NEBRASKA, dry conditions held populations at constant levels with very few extreme fluctuations in numbers occurring; infestations were approximately 3-35 per animal. This fly ranged light to moderate in most areas of NORTH DAKOTA. It was approximately normal in abundance and/or annoyance in UTAH.

Stable fly appeared in early May in WISCONSIN and it was the most numerous fly species in barns from late May through the summer. Populations in most areas of ILLINOIS varied 0-8 per animal throughout the season. The one exception was in the northwest where populations reached 2-120 (average 22.9) per animal on cattle July 13. Higher populations were encountered in INDIANA during early summer in the north central area than had been reported in 1963. These populations dwindled until they were average or below for the remainder of the season. Stable fly was more troublesome than usual to both man and cattle in several central and southern sections of MARYLAND. This fly was less annoying than normal in NEW YORK.

A heavy infestation of COMMON CATTLE GRUB (*Hypoderma lineatum*) was observed at Brewer, Penobscot County, MAINE, on a small herd of American bison. Unspecified CATTLE GRUBS were present throughout NEW YORK in normal numbers; little insecticide use is practiced. NORTHERN CATTLE GRUB (*H. bovis*) ranged 1-20 per head on feedlot bees in Sussex County, DELAWARE, during late March. By mid-April, most of the grubs of this species had dropped. Common cattle grub adults were noted in flight by April 17 in Delaware. Common cattle grub averaged 5.8 per animal on 24 animals checked in Wake County, NORTH CAROLINA, during the latter part of January. Two *H. bovis* grubs were found on these animals on February 25 and one grub on March 18. A similar group of cattle in the same location in Wake County averaged 4.9 *H. bovis* grubs on March 8, 1963. Common cattle grub infestations were light to moderate in GEORGIA; however, most of the infestations were light. Beef and dairy cattlemen were more concerned with *Hypoderma* spp. and *Haematobia irritans* (horn fly) than they were with *Musca autumnalis* (face fly) in ALABAMA. Better overall control efforts appear to have reduced populations of cattle grubs and horn fly over the past years in Alabama.

Increased activity during the summer of 1963 in INDIANA was reflected in higher counts of cattle grubs in the backs of animals during late winter. Reports of high activity during the summer of 1964 indicate high grub populations will again occur during the winter of 1964-65. Almost all activity in Indiana was due to common cattle grub with scattered reports of northern cattle grub as far south as Dubois County. A high percentage of cattle grubs infesting native cattle reached maturity in MICHIGAN. These flies left host animals during late May.

The usual population levels of common cattle grub and northern cattle grub occurred in WASHINGTON. These ranged about 8-10 grubs per head in untreated herds. Common cattle grub was a problem statewide in NEW MEXICO, especially in untreated herds. Common cattle grub caused concern in TEXAS, and was light in ARKANSAS due in part to widespread control measures. Moderate to heavy infestations of common cattle grub were present in OKLAHOMA from January through mid-March. Adults were active from mid-March to mid-May. Fall activity in Oklahoma was first noted in mid-November. Common cattle grub was present in normal numbers in KANSAS. Moderate populations of Hypoderma spp. were observed in the backs of cattle in the western part of NORTH DAKOTA in late March and early April.

BOT FLIES chased cattle in some Wasatch County meadows in UTAH. There was little change in bot flies on cattle in FLORIDA but there was an increase of Cuterebra spp. on domestic cats.

HORSE FLIES and DEER FLIES were of minor importance in ALASKA. Deer flies and horse flies were generally medium in NEVADA, but in several areas they were heavy. BLACK HORSE FLY (Tabanus atratus) and other horse flies and deer flies were approximately normal in abundance in UTAH. Horse flies (Tabanus spp.) and deer flies (Chrysops spp.) were bothersome in WYOMING but not so annoying as in 1963. Largest populations were noted in Sheridan, Johnson, Lincoln and Uinta Counties. These flies caused much annoyance in these areas of Wyoming. Tabanus sp. and Chrysops sp. were annoying to livestock in COLORADO. Tabanus spp. were present in low numbers in KANSAS. In OKLAHOMA, both Tabanus spp. and Chrysops spp. were active from early May to mid-October. Counts were heavy from mid-June to early July, lighter during July and heavy again in southeastern Oklahoma during August and September. Deer flies and horse flies caused concern in TEXAS. Early season populations of Tabanus spp. and Chrysops spp. in LOUISIANA were average to lower than average in most areas, but late season populations of Tabanus spp. were unusually high in some areas of southern Louisiana with seasonal population peaks occurring during late August and early September.

Horse flies were annoying to man and other animals in MISSOURI. They were very light throughout the season in ILLINOIS. Horse flies were more abundant than they had been for several years in southeastern NORTH DAKOTA; STRIPED HORSE FLY (Tabanus lineola) was the dominant species. Chrysops vittatus and other deer flies were in normal abundance in rural areas of RHODE ISLAND throughout the summer. C. atlanticus and Tabanus nigrovittatus were abundant on DELAWARE marshes during mid-June. Chrysops spp. and Tabanus spp. again annoyed man and other animals in all sections of MARYLAND, especially in the tidewater areas.

Early in 1964, self-perpetuating populations of SCREW-WORM (Cochliomyia hominivorax) were declared eradicated from the five-State screw-worm eradication area of TEXAS, NEW MEXICO, OKLAHOMA, ARKANSAS and LOUISIANA. Screw-worm incidence in 1964 was reduced 99.9 percent when compared with the million or more cases that occurred prior to the start of the eradication program in 1962. A total of 237 screw-worm cases was reported in the eradication area during 1964. All cases occurred in Texas and New Mexico, while the areas to the north and east remained free of the insect. Infestations were confined to 65 counties in Texas and 8 counties in New Mexico.

Nearly 12.5 billion sterile screw-worm flies have been reared and released since the start of the screw-worm program; 4.6 billion were dispersed in 1964. Program workers continued to strengthen the sterile fly barrier zone along the international border which provides protection against reinvasion by screw-worm from Mexico. Releases of screw-worm flies south of the international border were extended to a distance of about 200 miles along the east coast of Mexico in an effort to weaken concentrated populations of screw-worm in that region.

A livestock inspection line along the Arizona-New Mexico State line continued operation during 1964, protecting the eradication area from shipments of screw-worm infested livestock from the regions to the west. In ARIZONA, light

infestations of screw-worm occurred in early summer and began to increase gradually by late summer in the infested areas in the southern part of the State.

A BLOW FLY (*Calliphora* sp.) was annoying to livestock in COLORADO and BLACK BLOW FLY (*Phormia regina*) was more abundant and/or annoying than usual in UTAH. *Calliphora* sp. and ANTHOMYZID FLIES were the more common flies in barns and manure piles in ALASKA.

A BLACK FLY (*Simulium* sp.) was numerous in the Sidney area in MAINE by May 4, but it was not taking blood until May 6 and 7. First appearance in central Aroostook County was about May 24. Populations in that part of Maine were heavy as usual. BLACK FLIES were exceptionally heavy in the spring in VERMONT. Black flies were about normal in abundance in RHODE ISLAND but in CONNECTICUT numbers were up over 1963. During May, *Simulium* sp. was annoying to humans in the Seabrook area of Prince Georges County, MARYLAND. Black flies were heavy and annoying horses in Du Page County, ILLINOIS, in late June and early July. Black flies were annoying to livestock in COLORADO.

SHEEP KED (*Melophagus ovinus*) was especially abundant on untreated sheep in WASHINGTON. It was approximately normal in abundance and/or damage in UTAH. Sheep ked was annoying to stock in COLORADO. Light populations were present in small farm flocks of lambs and ewes in NEBRASKA. Several sheep shearers reported moderate populations of keds in Morrow and Marion Counties in OHIO. Wool loss due to sheep ked was reported in Montgomery County, PENNSYLVANIA.

EYE GNATS (*Hippelates pusio* and *H. bishoppi*) were the most abundant species in the sandhills and Coastal Plain of NORTH CAROLINA during late summer and early fall. *H. collusor* was a considerable nuisance to residents in ARIZONA in April and May, particularly in Yuma and Maricopa Counties.

BITING MIDGES (*Culicoides* spp.) were more abundant and annoying in the spring in DELAWARE, especially in areas of eastern Kent County. *C. variipennis* and *C. stonei* were reported from jack rabbits in Presidio County, TEXAS.

Other flies reported as a nuisance to animals included: A REINDEER WARBLE (*Oedemagena tarandi*) in ALASKA where it continues to be a constant problem in both reindeer and caribou on the mainland and on Nunivak Island. CATTLE WARBLER were not reported in Alaska in 1964. HORSE BOT FLY (*Gasterophilus intestinalis*) was annoying to animals in MISSOURI. WARBLE FLIES remained unchanged as a pests of cattle in FLORIDA.

AMERICAN DOG TICK (*Dermacentor variabilis*) adults were prevalent in and about several wooded areas in southern sections of MARYLAND during June and July. This pest was very numerous during the spring in DELAWARE in areas of New Castle County. American dog tick is distributed statewide in RHODE ISLAND and was heavier in the damp areas near Narragansett Bay in 1964. TICKS, probably American dog tick, were reported as heavy in MAINE. The communities of Otisfield, Casco, Raymond, Naples, Bridgton, Baldwin and Standish in Cumberland County and Cornish in York County, as well as other southern Maine areas, reported that populations and occurrences were higher than in 1963.

American dog tick populations on humans and wild animals were very heavy in many Upper Peninsula counties of MICHIGAN during the summer. In WISCONSIN, this pest was unusually plentiful in northern counties until mid-July. It was even found within city limits in some areas. It was common in Sauk and Marquette Counties, Wisconsin. This tick was reported numerous in MINNESOTA by May 8 in central and east central districts. Tick activity continued through June and even to mid-July in some areas. In eastern NORTH DAKOTA, American dog tick was common around wooded and grassy areas. Heavy populations were present on pets and around residences in eastern areas of NEBRASKA in May; several children were reported to have ticks. Infestations were fairly numerous on humans and dogs in KANSAS during the season. American dog tick caused considerable concern throughout OKLAHOMA. Populations were the highest recorded in MISSOURI in many years.

TROPICAL HORSE TICK (Dermacentor nitens) was first found in FLORIDA in Miami on August 10, 1961. Since then, well over 100 cases of equine piroplasmosis, a protozoan disease of horses transmitted by this vector, have been confirmed in Dade, Broward, Palm Beach, Orange and Hillsborough Counties. In 1964, a decrease in the number of D. nitens was noted in the area south of West Palm Beach where a control program is in progress. Very few ticks of this species can be found north of the Palm Beach area. WINTER TICK (D. albipictus) was collected on a dairy cow in Mifflin County, PENNSYLVANIA, in November. Winter tick was reported on antelope in Presidio County, TEXAS, and in OKLAHOMA, infestations were light in January with fall activity beginning in mid-October. ROCKY MOUNTAIN WOOD TICK (D. andersoni) was annoying to humans in COLORADO, and abundance was approximately normal in UTAH during the season.

BROWN DOG TICK (Rhipicephalus sanguineus) infestations in CALIFORNIA continued during the year with periodic local flareups, but reports were fewer in number than in the previous 2 years. Infestations were heavy in Clark and Washoe Counties of NEVADA. Heavy infestations in ARIZONA caused considerable annoyance and concern to dog owners throughout the southern area. Brown dog tick caused considerable concern throughout OKLAHOMA on pets and in homes, and was of concern in TEXAS. An unusual number of infestations were reported in LOUISIANA.

Brown dog tick infestations occurred in homes throughout MARYLAND during the winter. This tick was reported as numerous at times in PENNSYLVANIA in homes and on dogs, and infestations were higher in 1964 than during 1963 in NEW JERSEY homes. An increase in the number of infestations was reported in CONNECTICUT. There were periodic complaints in RHODE ISLAND concerning brown dog tick.

LONE STAR TICK (Amblyomma americanum) was taken from calves shipped in from out of the State in NORTH DAKOTA at Fargo, Cass County. TICKS, primarily lone star tick, were heavy as usual in ARKANSAS. Populations of lone star tick became active in late February in OKLAHOMA; were heavy on livestock throughout eastern Oklahoma through mid-September. Lone star tick and GULF COAST TICK (A. maculatum) caused concern in TEXAS. TICKS reached alarming proportions in and around homes in ALABAMA. Occasional reports of FOWL TICK (Argas persicus) were received in VIRGINIA. EAR TICK (Otobius megnini) was taken from calves from an out-of-State shipment at Fargo, NORTH DAKOTA. Ear tick was approximately normal in numbers and/or damage in UTAH. This tick caused concern in TEXAS during the season.

MITES, tentatively identified as CHICKEN MITE (Dermanyssus gallinae), were a nuisance in Mechanic Falls, MAINE, where light populations attacked humans in early June. Chicken mite infested homes in Kingston, Washington County, RHODE ISLAND, in mid-July. Infestations of unspecified POULTRY MITES were greater in CONNECTICUT in 1964 than in 1963. Poultry mites were average in NEW YORK where outbreaks occurred, dependent mainly on lack of control measures. TROPICAL RAT MITE (Ornithonyssus bacoti) infestations were reported from several homes in southern TEXAS and along the coast of the Gulf of Mexico. NORTHERN FOWL MITE (O. sylviarum) was annoying to man and other animals in MISSOURI. Northern fowl mite was present and required considerable control in poultry establishments in CALIFORNIA. Populations of wild birds occasionally carried infestations to homes and business establishments and caused considerable concern to humans. Local populations of tropical rat mite were not uncommon in California where rat populations were high. Northern fowl mite is the most common pest of chickens in the Matanuska Valley of ALASKA.

A CHIGGER MITE (Eutrombicula alfreddugesi) was a problem statewide in ALABAMA. It was present on lawns in towns, in recreation areas, campgrounds in general, and in nearby wooded lands adjacent to the ever-expanding housing developments. Unspecified CHIGGERS were a nuisance in untreated areas of KANSAS. In CALIFORNIA, a CANARY LUNG MITE (Sternostoma tracheacolum) caused losses in several instances early in the year. Apparently this rhinonyssid mite was more prevalent than in past years. Occurrence of an EARTHWORM MITE (Fuscuropoda agitans) has been high in earthworm beds of California.

SHORT-NOSED CATTLE LOUSE (*Haematopinus eurysternus*) was occasionally noted on cattle in ALASKA, especially on young stock in barns during the winter months. Short-nosed cattle louse was about normal in WASHINGTON; it is one of the major cattle pests in that State. *Haematopinus* spp. were only occasionally reported in CALIFORNIA; infestations of lice on livestock were generally lower than in 1963. Populations of short-nosed cattle louse were slightly larger in 1964 than in 1963 in WYOMING. **CATTLE LICE** are a serious problem to livestock even though many herds throughout Wyoming are effectively treated. **HOG LOUSE** (*H. suis*) infestations were moderate to heavy on hogs in southern and eastern OKLAHOMA in January and February and fall activity in Oklahoma began in mid-November. Hog louse on swine presented a serious winter problem in ALABAMA. A single specimen of short-nosed cattle louse was collected in GEORGIA.

LONG-NOSED CATTLE LOUSE (*Linognathus vituli*) was one of the major pests of cattle in WASHINGTON; about normal numbers occurred in that State. *Linognathus* spp. were occasionally reported in CALIFORNIA. *Solenoptes capillatus* populations in WYOMING were slightly larger in 1964 than they were in 1963. Long-nosed cattle louse was moderately abundant on range cattle in southeastern NORTH DAKOTA and *S. capillatus* was abundant on cattle in the Linton area of Emmons County. Long-nosed cattle louse was collected from calves in NEW MEXICO near Crossroads, Lea County. *S. capillatus* and long-nosed cattle louse were heavier than normal in ARKANSAS, especially in the northwest area. Infestations of long-nosed cattle louse were light to moderate in GEORGIA, most infestations being light. *S. capillatus* infestations were mostly light in Georgia; however, one herd in Putnam County had an average of 8.8 per square inch.

HUMAN LICE (*Pediculus* spp.) and **CRAB LOUSE** (*Phthirus pubis*) incidence was fairly high in transient populations in concentrated areas of CALIFORNIA. Occasional local outbreaks of **HEAD LOUSE** (*Pediculus humanus capitis*) occurred. Crab louse incidence was low and confined primarily in the slum or skid row districts.

CATTLE BITING LOUSE (*Bovicola bovis*) was occasionally noted on young stock in barns in ALASKA during the winter months. About normal abundance of cattle biting louse was noted in WASHINGTON where this mammal chewing louse is one of the major cattle pests. Infestations of cattle biting louse were heavier on beef cattle in OHIO in 1964 than in 1963. LICE on livestock and poultry were average in NEW YORK with outbreaks due mainly to lack of control measures. Lice on beef and dairy cattle, particularly young stock, were present on many New York farms, but they seldom caused serious production losses as pesticides were effective. Young dairy stock, as usual, were the most seriously parasitized animals. **CATTLE LICE** were moderate to heavy throughout OKLAHOMA from January to early April, then populations began to decline. First fall activity in Oklahoma was noted in mid-November. Several species of cattle lice caused concern in TEXAS. Populations of cattle lice were about average in NEVADA but in some areas, infestations were above normal.

POULTRY LICE were at low ebb due to new control measures in NEW YORK. **CHICKEN BODY LOUSE** (*Menacanthus stramineus*) was heavy in northwest ARKANSAS.

FLEAS (*Ctenocephalides* spp.) caused the usual number of complaints in all sections of RHODE ISLAND in late summer and early fall. **DOG FLEA** (*C. canis*) and **CAT FLEA** (*C. felis*) populations remained about the same in CONNECTICUT but they were numerous. Cat flea was especially troublesome during the summer months in NEW JERSEY in homes and lawns. Fleas were abundant in yards and in homes in GEORGIA in the Atlanta area during summer and fall. Cat flea and dog flea were widespread and annoying to pets throughout ALABAMA, where populations reached alarming proportions in basements, inside homes and on a few lawns. Fleas, presumably dog flea, were reported on dogs in the Anchorage area of ALASKA for the first time in many years. Cat flea was locally heavy in some CALIFORNIA cities; the incidences were probably much lower in 1964 than in 1963. Only an occasional report of **HUMAN FLEA** (*Pulex irritans*) was reported in California. Human flea populations were heavy in a home in Hazen, Churchill County, NEVADA, in March. This constituted a new State record.

HORNETS and WASPS were very numerous in CONNECTICUT, and wasps were more numerous than usual in PENNSYLVANIA. Wasps and BEEES were a severe problem during late summer and early fall in NEW JERSEY where they were troublesome around swimming pools, refreshment stands, picnic areas and homes. The high incidence in these areas was attributed to drought which prevailed over most of New Jersey. Wasps, especially YELLOW JACKETS and Polistes spp., were very annoying to many suburbanites in MARYLAND during late summer. GIANT HORNET (Vespa crabro germana) caused much concern to homeowners in the Atlanta area of GEORGIA; numerous calls were noted.

BLOODSUCKING CONENOSE (Triatoma sanguisuga) was reported feeding on a man in Douglas County, MISSOURI, on August 26, and was found in homes in several areas of OKLAHOMA during the season. Triatoma sp. caused considerable concern to residents in areas of TEXAS.

A BROWN SPIDER (Loxosceles reclusa) was reported in Webster Parish, LOUISIANA, for the first time in 1964. An unusual number of BLACK WIDOW SPIDER (Latrodectus mactans) infestations were reported in Louisiana also. L. reclusa was found in numerous homes throughout OKLAHOMA and occasional bites were reported. L. reclusa was observed in homes and other structures in MISSOURI. Two additional county records were recorded in ILLINOIS when L. reclusa was found in office buildings or homes in Edwards and Wayne Counties.

HOUSEHOLD AND STRUCTURAL INSECTS

Highlights:

TERMITES were considered the most important structural pests in Indiana, Missouri, Arkansas, Alabama, Maryland and Connecticut. Infestations of CARPENTER ANTS appeared to have increased in Massachusetts and Rhode Island, and structural damage was reported from Alaska. NOCTUID MOTHS (Litoprosopus spp.) damaged rugs and furniture in Florida and California. LARDER BEETLE infestations were more widespread in Michigan and Indiana. COCKROACHES were the most important household and food pests in New Jersey, Alabama, Missouri, and Alaska. BOXELDER BUG, STRAWBERRY ROOT WEEVIL and CLOVER MITE were common nuisance pests in many States. FACE FLY was more numerous in houses in Connecticut and occurred in homes in Pennsylvania and Virginia. OLD-HOUSE BORER was recorded as a new State record for Missouri and EUROPEAN EARWIG was found for the first time in Alaska. Both were found in material shipped from other States.

WESTERN DRYWOOD TERMITE (Incisitermes minor) and WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) were extremely damaging to residences and other structures in CALIFORNIA in 1964. Western subterranean termite caused heavy damage to the foundation of a house near Friday Harbor, San Juan County, WASHINGTON. Reports of damage by this species were received from all areas of WYOMING about as often as they were in 1963. In NEVADA, a heavy infestation of a DESERT DAMPWOOD TERMITE (Paraneotermes simplicicornis) occurred in wood under a home in East Las Vegas, Clark County, and swarms of adults were numerous in homes in that county. Infestations of SUBTERRANEAN TERMITES (Reticulitermes spp.) in Nevada homes were above the 1963 level and equal to the 1962 level. A few homes were found to be infested by TERMITES at Cedar City and elsewhere in Iron County, UTAH, during the summer. Several species of termites caused concern to homeowners in various sections of TEXAS, Incisitermes sp. being collected from homes in Matagorda County.

In KANSAS, about 6,200 buildings were treated for termites, a slight increase over previous years. EASTERN SUBTERRANEAN TERMITE (*Reticulitermes flavipes*) was considered the most important structural pest of 1964 in MISSOURI. Although no unusual population fluctuations were observed in INDIANA, subterranean termites continue to be the most important structural pests. A similar condition was reported from ARKANSAS, where winged forms were observed in the northwestern section on March 28.

Eastern subterranean termite occurs statewide in ALABAMA where it is considered the most important structural pest. Swarming termites were reported from all sections of NORTH CAROLINA from February through May, with one swarm reported from Orange County on August 29. Termites were reported to be very common throughout VIRGINIA and were the most important structural pests in MARYLAND during 1964. Large swarms were noted in New Castle County, DELAWARE, from mid-March through April and new infestations in houses were rather numerous during the season. Swarms were more widespread throughout NEW JERSEY than in 1963. Termites were the number one insect problem for homeowners in CONNECTICUT during 1964. The first winged forms of eastern subterranean termite were reported from Saunderstown, Washington County, RHODE ISLAND, on February 18, with reports common through mid-May.

A POWDER-POST BEETLE (*Lyctus cavicollis*) infested wood in several residences in CALIFORNIA. Infestations of unspecified POWDER-POST BEETLES were more numerous than normal in UTAH. These beetles were observed in homes and other structures in MISSOURI. These pests caused about the usual number of complaints in NEW HAMPSHIRE.

BOSTRICHID BEETLES were pests in ALABAMA. In Anaheim, Orange County, CALIFORNIA *Stephanopachys substriatus* occurred locally in kitchen cabinets. LEAD-CABLE BORER (*Scobicia declivis*) occurred occasionally in wood paneling and oak pallets in California.

WHARF BORER (*Nacerdes melanura*) was a household pest in PENNSYLVANIA. ANOBIID BEETLES were structural pests in ALABAMA and an infestation was found in a building in Chepachet, Providence County, RHODE ISLAND. BARK BEETLES were about normal in Rhode Island during 1964.

OLD-HOUSE BORER (*Hylotrupes bajulus*) was found in Boone County, MISSOURI, in a piece of furniture brought from out of State in 1959. This is a new State record. This species was reported occasionally in VIRGINIA and was a structural pest in ALABAMA.

A HORNTAIL (*Urocerus flavicornis*) was very common in ALASKA, with several specimens reported to have emerged from the walls of buildings in the Matanuska Valley. CARPENTER BEE (*Xylocopa virginica*) damaged buildings in Bonnet Shores Beach, Quonset Point, and Hope Valley in Washington County, RHODE ISLAND, and damage also occurred in VIRGINIA. Unspecified CARPENTER BEES were more numerous in PENNSYLVANIA, and home infestations in NEW JERSEY appeared to be somewhat above 1963 levels.

CARPENTER ANTS (*Camponotus* spp.) were much more numerous than usual in ALASKA and were destructive to rough-finished beams in buildings and to many log buildings. Several species were of concern to homeowners in parts of TEXAS. These pests were a common problem to homeowners in NORTH CAROLINA and were occasionally reported in VIRGINIA. In NEW JERSEY, infestations in homes appeared to be somewhat higher than in 1963. Large swarming flights occurred throughout MASSACHUSETTS and caused more inquiries than usual. They were abundant statewide in RHODE ISLAND and the volume of complaints suggests some increase in house infestations, or at least an increased awareness on the part of householders.

Several infestations of an unspecified brown POWDER-POST BEETLE were found in bamboo curtains in NEW JERSEY. Several species of CARPET BEETLES, including BLACK CARPET BEETLE (*Attagenus piceus*) and FURNITURE CARPET BEETLE (*Anthrenus*

flavipes), were collected on numerous occasions inside homes in all sections of MARYLAND. Carpet beetles remain one of the most destructive household pests in PENNSYLVANIA. No change was reported from CONNECTICUT; reports of household infestations were received from all parts of RHODE ISLAND. Several black carpet beetle infestations were reported in NORTH DAKOTA. In ALASKA, black carpet beetle and other species are becoming a widespread problem, with specimens received almost weekly throughout 1964.

In INDIANA, CASEMAKING CLOTHES MOTH (Tinea pellionella) and WEBBING CLOTHES MOTH (Tineola bisselliella) continued to decline in importance. This may be due to numerous factors including increased use of synthetic fabrics, improved cleaning and storage facilities, and more effective household insecticides. Casemaking clothes moth was of concern to homeowners in parts of TEXAS, and no change in importance was observed in CONNECTICUT.

A NOCTUID MOTH (Litoprosopus coachella) was a problem in several areas of CALIFORNIA. The larvae invaded residences and business establishments to pupate, where they caused severe damage to rugs and other materials. The larvae of L. futilis were a nuisance during midsummer in the Daytona Beach-De Land area of Volusia County, FLORIDA, where they migrated into homes to pupate in rugs, draperies and stuffed furniture.

INDIAN-MEAL MOTH (Plodia interpunctella) infested a variety of stored foods in homes at numerous locations in MARYLAND. Infestations were numerous in homes in DELAWARE, particularly in New Castle County. This pest was quite general in PENNSYLVANIA and was observed in homes in various areas of NORTH DAKOTA. YELLOW MEALWORM (Tenebrio molitor) was occasionally reported in VIRGINIA.

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was common in cereals and packaged mixes in ALASKA. In COLORADO, most infestations were reported from households. This pest was observed in homes and other structures in MISSOURI and was reported numerous times in PENNSYLVANIA. Moderate to heavy infestations were reported in two apartments in Augusta, Kennebec County, MAINE, in January.

Household infestations of LARDER BEETLE (Dermestes lardarius) continued to be reported in greater numbers than usual in MICHIGAN, especially in insulating materials. An unprecedented number of infestations occurred in INDIANA homes during spring and summer. Indications suggest that dead Musca autumnalis (face fly) and Pollenia rudis (cluster fly) adults in the walls of homes may have been a contributing factor. Larder beetle was also reported frequently in homes in VERMONT, with one instance of adults coming through accoustical ceiling tile noted in 1964. Several species of DERMESTID BEETLES were of concern to homeowners in parts of TEXAS. More infestations were reported in WYOMING in 1964 than in 1963. Several species were found in foodstuffs and clothing in many areas, but only slight damage resulted in most cases. Attagenus sp. was reported in homes in OKLAHOMA.

CIGARETTE BEETLE (Lasioderma serricorne) was a common pantry pest in CALIFORNIA. CADELLE (Tenebroides mauritanicus) and CONFUSED FLOWER BEETLE (Tribolium confusum) were common pests in cereals and packaged mixes in ALASKA. Most reports of confused flour beetle in COLORADO were by housewives. In RHODE ISLAND, an infestation of GRANARY WEEVIL (Sitophilus granarius) was found in a home in Riverside and BROAD-HORNED FLOUR BEETLE (Gnathocerus cornutus) was collected in Providence,, Providence County.

An average number of reports of BROWN-BANDED COCKROACH (Supella supellectilium), ORIENTAL COCKROACH (Blatta orientalis), GERMAN COCKROACH (Blattella germanica), and WOOD COCKROACHES (Parcoblatta spp.) were received from all parts of RHODE ISLAND. In CONNECTICUT, COCKROACHES were about as abundant as in past years. AUSTRALIAN COCKROACH (Periplaneta australasiae) was collected in a home in Centre County, PENNSYLVANIA. Cockroaches increased generally in urban and rural areas of NEW JERSEY. Oriental cockroach, brown-banded cockroach and American

cockroach were common, but German cockroach was the most widespread and troublesome in New Jersey. In MARYLAND, numerous reports of brown-banded cockroach and German cockroach were received from homeowners. Oriental cockroach was reported from several locations in VIRGINIA. In NORTH CAROLINA, brown-banded cockroach, American cockroach, oriental cockroach, and SMOKY-BROWN COCKROACH (Periplaneta fuliginosa) were observed in homes. Cockroaches are perhaps the most important household insects in ALABAMA, including German cockroach, oriental cockroach, brown-banded cockroach, and smoky-brown cockroach, in order of importance.

In INDIANA, German cockroach continues to be the most important cockroach in hotels, restaurants and other establishments where food is processed or served. Reports indicate that resistance to chlorinated hydrocarbon insecticides has reached a high level. In MISSOURI, American cockroach, German cockroach, oriental cockroach and brown-banded cockroach were considered the most troublesome household pests of 1964. Brown-banded cockroach, oriental cockroach and German cockroach were probably more prevalent in CALIFORNIA. Cockroaches were one of the main household pests in Clark County, NEVADA, and in WYOMING, infestations of German cockroach were reported from Fremont, Goshen, Laramie and Albany Counties, during 1964. In ALASKA, cockroaches, especially German cockroach and brown-banded cockroach, were the most numerous pests in homes, apartments and buildings on military installations.

FIELD CRICKETS (Gryllus spp.) were more numerous than usual around lights and in homes throughout OKLAHOMA and were a problem in and around homes in eastern NORTH DAKOTA. CAMEL CRICKETS (Ceuthophilus spp.) were found in homes in southeastern North Dakota and in Newport, Newport County, RHODE ISLAND. A CRICKET (Gryllus sp.) was less conspicuous than in previous years in Rhode Island, but there was a complaint of a household infestation from Warwick, Kent County, in September.

The first seasonal reports of BOXELDER BUG (Leptocoris trivittatus) in NORTH CAROLINA were from Person and Stanly Counties during the first week of February. Reports were also received during March and again from late May through the first week in June, primarily from the Piedmont area. Relatively few reports were received in the fall. This insect appeared to be very abundant in various sections of VIRGINIA. In MARYLAND, it was a nuisance in and around homes and buildings, usually during fall and early winter. Numbers were heavy in DELAWARE homes, especially in New Castle County. Infestations in NEW JERSEY did not appear to be so heavy as in 1963, but this coreid bug was a nuisance in several areas during the fall, continuing through December. Boxelder bug migrated into homes in PENNSYLVANIA in increasing numbers during 1964. In CONNECTICUT, more requests for information about this pest are received every year. It was abundant locally in the Blackstone Valley section of Providence County, RHODE ISLAND, where it has been a perennial nuisance for over a decade. Numerous specimens were sent in by concerned homeowners in NEW HAMPSHIRE, where it is apparently most troublesome in Manchester, Hillsboro County, and Concord, Merrimack County. No statewide population trend was noted in INDIANA. Overwintering adults were annoying in homes in WISCONSIN by early April and were particularly numerous in some houses near boxelder trees until warm weather began. Migration into homes occurred with the arrival of cool, fall weather. Adults migrated into homes in NEBRASKA in late October, and were reported in homes in MISSOURI and COLORADO.

A FALSE CHINCH BUG (Nysius raphanus) and a COREID BUG (Arhyssus scutatus) invaded residences in CALIFORNIA, causing a considerable nuisance. Another COREID BUG (Jadera sp.) was of concern to homeowners in areas of TEXAS. GIANT WATER BUG (Lethocerus americanus) was a nuisance around homes in the Fargo area of Cass County, NORTH DAKOTA.

An undetermined ANT-LIKE FLOWER BEETLE was numerous in a house in Westerly, Washington County, RHODE ISLAND, in late July. The source of the infestation was not determined. BEAN WEEVIL (Acanthoscelides obtectus) infested a house in Greenville, Providence County, Rhode Island, in May and adults were a nuisance in a few residences and commercial buildings in CALIFORNIA. An unidentified

GROUND BEETLE invaded a house in West Warwick, Kent County, RHODE ISLAND, in early June. Several CERAMBYCID BEETLES (*Neoclytus* sp. and *Phymatodes* spp.) infested fireplace wood in Rhode Island. RED-HEADED ASH BORER (*N. acuminatus*), *P. variabilis*, and a BUPRESTID BEETLE (*Buprestis striata*) caused concern to homeowners in PENNSYLVANIA by emerging from fireplace wood.

An average number of reports of ELM LEAF BEETLE (*Galerucella xanthomelaena*) in homes were received in RHODE ISLAND. Adults migrated into homes in PENNSYLVANIA and were common in homes throughout VIRGINIA. This insect was observed in homes and other structures in MISSOURI, and was a nuisance in some homes in ARKANSAS and northwestern TEXAS.

A SPIDER BEETLE (*Mezium affine*) was moderate to heavy in a home in Augusta, Kennebec County, MAINE, in April. DARKLING BEETLES were unusually heavy in urban areas of Clark County, NEVADA, and adults concentrated at night near lighted, populated areas in NEBRASKA during August. *Blapstinus* spp. plagued many areas of ARIZONA, large numbers invading homes and causing a general nuisance.

STRAWBERRY ROOT WEEVIL (*Brachyrhinus ovatus*) was abundant in homes in several areas in eastern NORTH DAKOTA. Many inquiries were made by householders in MINNESOTA, indicating this pest to be exceptionally numerous statewide. In WISCONSIN, adults emerged by May 15 and migrated into homes soon afterwards, with annoyance continuing through the summer. Household infestations occurred in late July in Providence County, RHODE ISLAND, at Lincoln, Riverside, Johnston and Cumberland. In MASSACHUSETTS, a larger number of inquiries than usual were received regarding this household nuisance. This pest migrated into homes in PENNSYLVANIA and adult populations were high during mid-July in DELAWARE where more house infestations occurred than in the past several years. Strawberry root weevil adults occurred in homes in Carroll, Harford and Talbot Counties, MARYLAND, and were common in homes throughout VIRGINIA.

ASIATIC OAK WEEVIL (*Cyrtopistomus castaneus*) was occasionally reported in VIRGINIA. A JAPANESE WEEVIL (*Calomycterus setarius*) was less of a problem in Virginia than in 1963, but caused some annoyance by migrating into homes. In RHODE ISLAND, a very heavy infestation of *C. setarius* occurred around a house in Richmond, Washington County, for the second year. BLACK VINE WEEVIL (*Brachyrhinus sulcatus*) migrated into homes in PENNSYLVANIA. Some other WEEVILS which caused annoyance by entering homes were *Ophryastes* sp. in Potter County, TEXAS; *Trachyploeus bifoveolatus* in western WASHINGTON during late spring and fall; and *Eudiagogus rosenscholdi* in the western section of Tampa, Hillsborough County, FLORIDA, during late June and early July.

ANTS caused about the usual number of complaints in NEW HAMPSHIRE during 1964. Various species, especially PAVEMENT ANT (*Tetramorium caespitum*) and LARGER YELLOW ANT (*Acanthomyops interjectus*), caused annoyance to homeowners throughout MARYLAND. These two species were very common throughout NEW JERSEY where they were troublesome through December. Mating flights caused considerable concern and, in many instances, were mistaken for termite swarms. Most inquiries about pavement ant during fall and winter concerned infestations in homes with slab construction. In VIRGINIA, a few reports of pavement ant were received and SILKY ANT (*Formica fusca*) was frequently reported by homeowners throughout the State. In NORTH CAROLINA, several reports of larger yellow ant were received during March. Several species of ANTS caused concern over a wide area of TEXAS. In NORTH DAKOTA, a well established colony of PHARAOH ANT (*Monomorium pharaonis*) was observed in Fargo, Cass County. In CALIFORNIA, ODOROUS HOUSE ANT (*Tapinoma sessile*) was more troublesome in residences in 1964 than before.

Various WASPS became troublesome around homes in southeastern NORTH DAKOTA during the latter part of the season. Complaints of annoyance by VESPID WASPS in homes and other building were about normal in UTAH. These pests were widespread and annoying in ALASKA, especially the paper-nest building species, but a few ground nesting species were also occasional problems. In RHODE ISLAND, a normal number of reports of SAWFLIES infesting firewood was received.

HOUSE FLY (*Musca domestica*) was one of the most important household pests in ALABAMA and was more abundant than normal in UTAH. FACE FLY (*M. autumnalis*) populations in homes increased in CONNECTICUT. Face fly and CLUSTER FLY (*Pollenia rudis*) entered homes in PENNSYLVANIA and were reported in VIRGINIA. Cluster fly was more abundant than usual in homes in Montgomery, Prince Georges and Talbot Counties, MARYLAND, and was troublesome in houses in VERMONT during early and late fall. Numbers were approximately normal in UTAH. MOTH FLIES were unusually abundant generally in PENNSYLVANIA and were heavy in homes in Hamilton County, TEXAS. A MOTH FLY (*Telmatoscopus albipunctatus*) was a problem in several homes in Anne Arundel and Prince Georges Counties, MARYLAND, during July and August. Face fly, cluster fly, FLESH FLIES, and SOLDIER FLIES were observed in homes and other structures in MISSOURI.

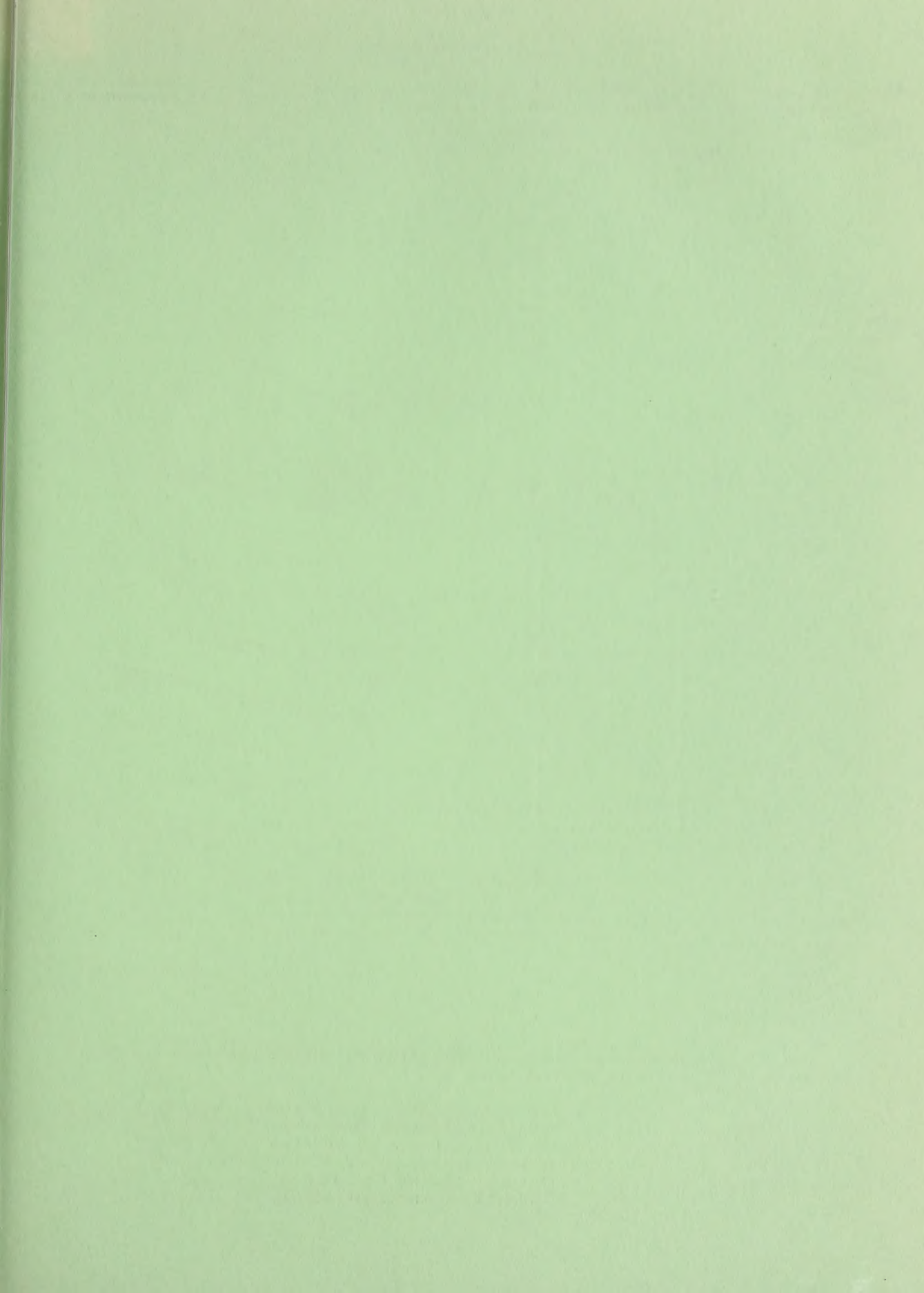
EARWIGS invaded houses in many localities in NEW HAMPSHIRE, causing numerous complaints; populations increased in CONNECTICUT in 1964. Several species were of concern to homeowners in one or more areas of TEXAS. An EARWIG (*Labidura riparia*) caused much annoyance when continuous heavy infestations occurred in homes in ARIZONA during spring and summer. Repeated controls were necessary. Infestations of this species were general in GEORGIA and caused considerable concern to homeowners. EUROPEAN EARWIG (*Forficula auricularia*) continued to bother homeowners in the Portland area and coastal region of Cumberland County, MAINE. Light infestations were reported around homes in the Rockland area of Knox County. This species was reported over widely scattered areas of VERMONT. Although it sometimes occurred in large numbers, no damage was reported. In RHODE ISLAND, this earwig became evident statewide in late June and was more abundant than usual, but declined in mid-August. European earwig was found in packing material that had been shipped to ALASKA from out of State. Whether or not European earwig will survive in Alaska is unknown.

Several species of PILLBUGS were a nuisance to homeowners in many areas of TEXAS. SILVERFISH (*Lepisma saccharina*) was one of the main household pests in Clark County, NEVADA, and FIREBRAT (*Thermobia domestica*) was a household pest in PENNSYLVANIA. During June and July, SPRINGTAILS migrated into many homes in the central counties of NEW JERSEY. There was a substantial increase over similar occurrences in 1963. Numerous homes were invaded in DELAWARE during early July. Springtails were unusually abundant and troublesome inside buildings and homes in Howard, Prince Georges and Talbot Counties, MARYLAND, and were occasionally reported in VIRGINIA. Springtails were of concern to homeowners in parts of TEXAS.

Mass migrations of MILLIPEDS into homes in INDIANA were less numerous than in previous years. Dry weather from mid-July on may have contributed to the reduction. In NEBRASKA, millipeds migrated into houses in late August and were abundant in and around homes in southeastern NORTH DAKOTA during the latter part of the season. Infestations prompted very few reports in NORTH CAROLINA during 1964, whereas they were quite numerous in 1963. Occurrences of HOUSE CENTIPEDE (*Scutigera coleoptrata*) were occasionally reported in VIRGINIA.

CLOVER MITE (*Bryobia praetiosa*) was very numerous in CONNECTICUT in 1964 and invaded homes in VERMONT on several occasions. Complaints of household infestations, some very heavy and persistent, were received from all parts of RHODE ISLAND. In DELAWARE, it continued to be a serious nuisance pest. Clover mite was annoying to homeowners in several suburban communities in MARYLAND and invaded homes throughout VIRGINIA. Most reports in NORTH CAROLINA occurred during February, March and April. This pest was not so troublesome there as it was in 1963. Clover mite migrated into homes in PENNSYLVANIA, was a nuisance in some homes in ARKANSAS and was observed in homes and other structures in MISSOURI. This mite was a nuisance to homeowners in many areas of WISCONSIN, and was present throughout the summer. Fall migrations into houses caused much concern to homeowners throughout WYOMING. This mite was present in homes in COLORADO and was more troublesome than usual in homes in UTAH. Migrations into homes occurred almost statewide in NEVADA during winter and spring. In CALIFORNIA, clover mite infestations in homes were about the same as in past years, with the

normal irritation to residents. MUSHROOM MITE (Tyrophagus putrescentiae) was also a household pest in CALIFORNIA. Infestations occurred occasionally throughout the year. WINTER GRAIN MITE (Penthaeus major) was very numerous in one home in PENNSYLVANIA.



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